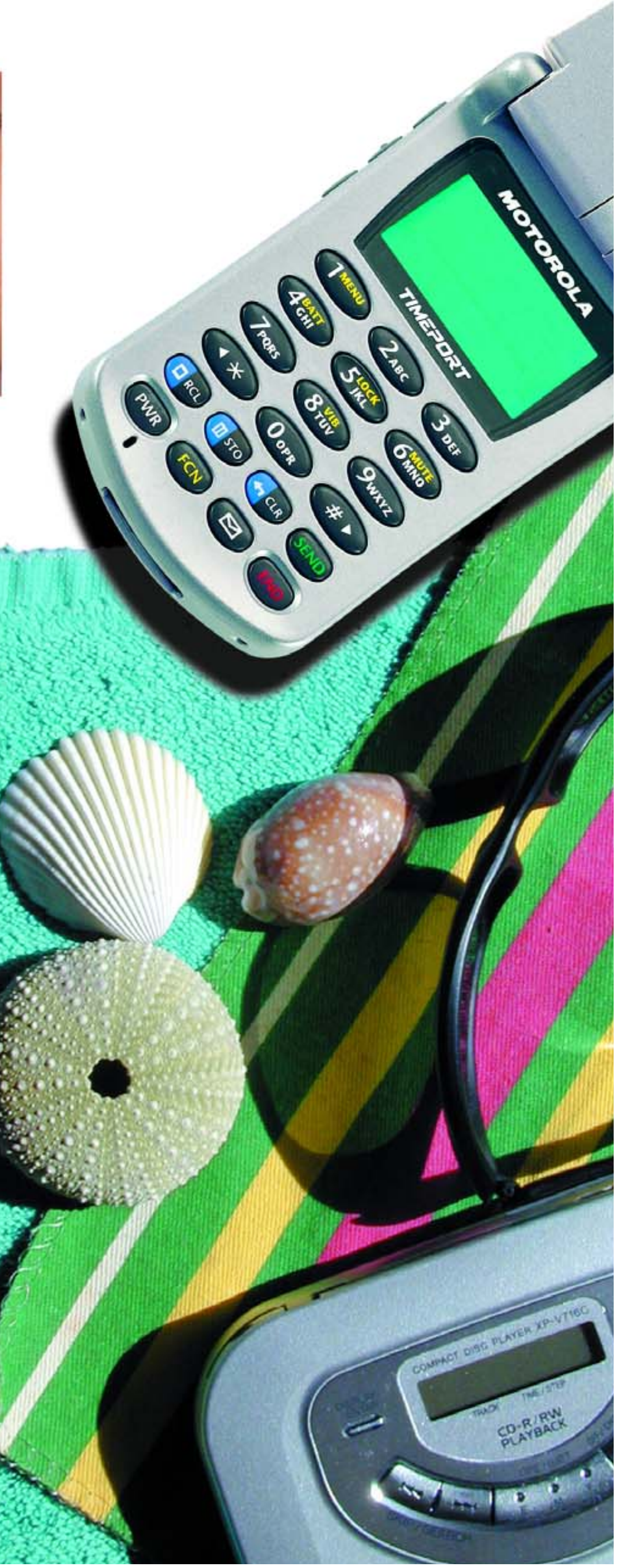
CHAPTER 1

Introduction to Computers

Your last final exam is complete; the semester is over! Tonight, you finally will get a good night's sleep. This semester was the most intense yet. You are a bit anxious about your grades in sociology and psychology; but ... no more waiting for mail delivery! For the first time, the school's registration department will post grades on the Internet. They should be available by the weekend.

On Friday morning, you access the Internet from your home computer to find the grades have not been posted. When you meet your sister for lunch, you discuss the anticipation of receiving your grades via the Internet. She reaches for a computer in her briefcase and accesses the Internet. Still no grades. Then while visiting a friend, you ask if he has Internet access. He pulls a handheld computer out of his coat pocket and uses it to connect to the Internet. No grades yet.

Saturday finds you relaxing with friends at the beach. With a cellular telephone in hand, one friend shouts, "Our grade reports made it to the Internet!" You cross your fingers while entering your student identification number on the telephone keypad. Yes! Three As and two Bs. Now you can enjoy the summer.



OBJECTIVES

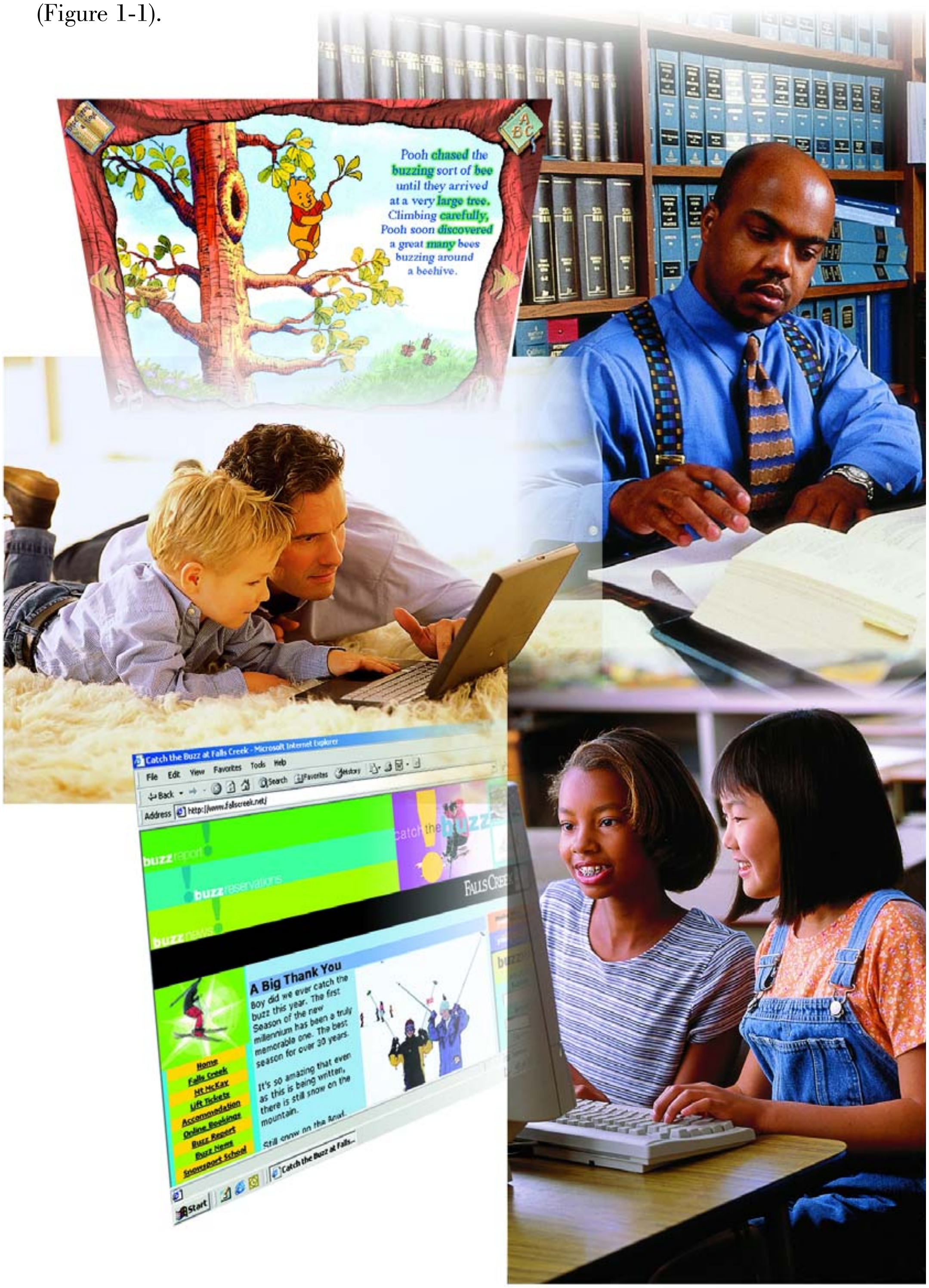
After completing this chapter, you will be able to:

- Explain the importance of computer literacy
- Define the term computer
- Identify the components of a computer
- Explain why a computer is a powerful tool
- Differentiate among the various categories of software
- Explain the purpose of a network
- Discuss the uses of the Internet and the World Wide Web
- Describe the categories of computers and their uses
- Identify the various types of computer users
- Understand how a user can be a Web publisher

THE DIGITAL REVOLUTION

Computers are everywhere … at home, at work, and at school. Most of our daily activities either involve the use of or depend on information from a computer. Activities such as learning to read, contacting a senator, looking up a stock quote, visiting a museum, or planning a trip, could involve the use of computers (Figure 1-1).

With a home computer, you can balance your checkbook, pay bills, track personal income and expenses, transfer funds, buy or sell stocks, and evaluate financial plans. People deposit or withdraw funds through an ATM (automated teller machine). At the grocery store, a computer tracks your purchases and calculates the amount of money you owe. It also usually generates coupons customized


Pooh chased the buzzing sort of bee until they arrived at a very large tree. Climbing carefully, Pooh soon discovered a great many bees buzzing around a beehive.
Catch the Buzz at Falls Creek - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://www.fallscreek.net/
buzz report
buzz reservations
buzz news
catch the buzz
FALLS CREEK
A Big Thank You
Boy did we ever catch the buzz this year. The first Season of the new millennium has been a truly memorable one. The best season for over 30 years.
It's so amazing that even as this is being written, there is still snow on the mountain.
Home
Falls Creek
Mt McKay
Lift Tickets
Accommodation
Online Bookings
Buzz Report
Buzz News
Snowsport School
Start

to your buying patterns. Many cars today include an onboard navigation system that provides directions, signals for emergency services, and tracks the vehicle if it is stolen.

In the workplace, people use computers to create correspondence such as memos and letters, calculate payroll, track inventory, and generate invoices. Both schools and homes have computers for educational purposes. Teachers use them to assist with the instruction. Students complete assignments and do research on computers in lab rooms and at home.

Many people find hours of entertainment on the computer. They play games, listen to music, watch a video or a movie, read a book or magazine, make a family tree, compose a video, re-touch a photograph, or plan a vacation.

Through computers, society has access to information from all around the globe. Instantaneously, you can find local and national news, weather reports, sports scores, stock prices, your medical records, your credit report, and countless forms of educational material. At your fingertips, you can send messages to others, meet new friends, shop, fill prescriptions, file taxes, or take a course.

Figure 1-1 Computers are present in every aspect of daily living.

Computers have become a primary tool people use to communicate with others. The brilliance of these communications is they are not limited to text. With today's technology, you also can transmit voice, sounds, video, and graphics. Use the computer to see others while you talk to them. Send family, friends, or clients videos or photographs.

The digital revolution is upon us. Technology continues to advance and computers extend into more facets of daily living. To be successful in this digital world, it is essential you are computer literate. Being **computer literate** means you have knowledge and understanding of computers and their uses.

The purpose of this book is to present the knowledge you need to understand how computers work and how computers are used. While you read, remember this chapter is an overview and many of the terms and concepts introduced will be discussed further in later chapters.

WHAT IS A COMPUTER?

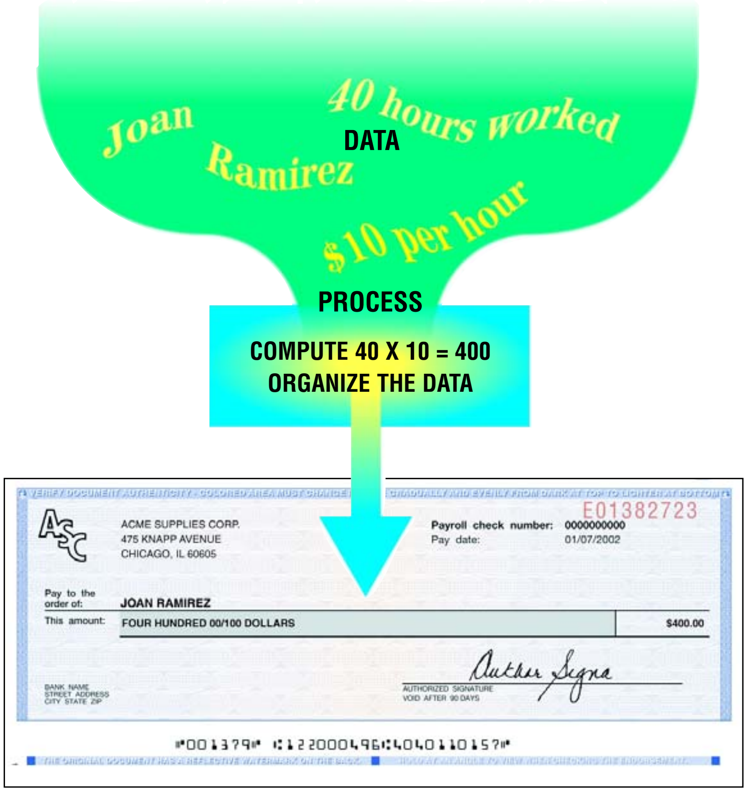
A **computer** is an electronic machine, operating under the control of instructions stored in its own memory, that can accept data, manipulate the data according to specified rules, produce results, and store the results for future use.

Data and Information

Data is a collection of raw unprocessed facts, figures, and symbols. Computers process data to create information. **Information** is data that is organized, meaningful, and useful. As shown in Figure 1-2, a computer processes several data items to produce a paycheck. Another example of information is a grade report, which is generated from data items such as a student name, course names, and course grades.

A **user** is someone that communicates with a computer or uses the information it generates.

Hardware is the electric, electronic, and mechanical equipment that makes up a computer. **Software** is the series of instructions that tells the hardware how to perform tasks. Without software, most hardware is useless. The hardware needs instructions from software to process data into information.



E01382723

ACME SUPPLIES CORP.
475 KNAPP AVENUE
CHICAGO, IL 60605

Payroll check number: 0000000000
Pay date: 01/07/2002

Pay to the order of: JOAN RAMIREZ

This amount: FOUR HUNDRED 00/100 DOLLARS $400.00

BANK NAME
STREET ADDRESS
CITY STATE ZIP

Author Signa
AUTHORIZED SIGNATURE
VOID AFTER 90 DAYS

⑈001379⑈ ⑆122000496⑆4040110157⑈

Figure 1-2 A computer processes data into information. In this example, the employee name, number of hours worked, and hourly pay rate each represent data. The computer processes these items to produce the paycheck.

Information Processing Cycle

Input is any data or instructions you enter into a computer. **Output** is data that has been processed into information. Computers process input (data) into output (information). **Storage** is an area in a computer that can hold data and information for future use. This series of input, process, output, and storage activities sometimes is called the **information processing cycle**.

Most computers today have the capability of communicating with other computers. Thus, communications also has become an important element of the information processing cycle.

THE COMPONENTS OF A COMPUTER

A computer consists of a variety of hardware components that work together with software to perform calculations, organize data, and communicate with other computers.

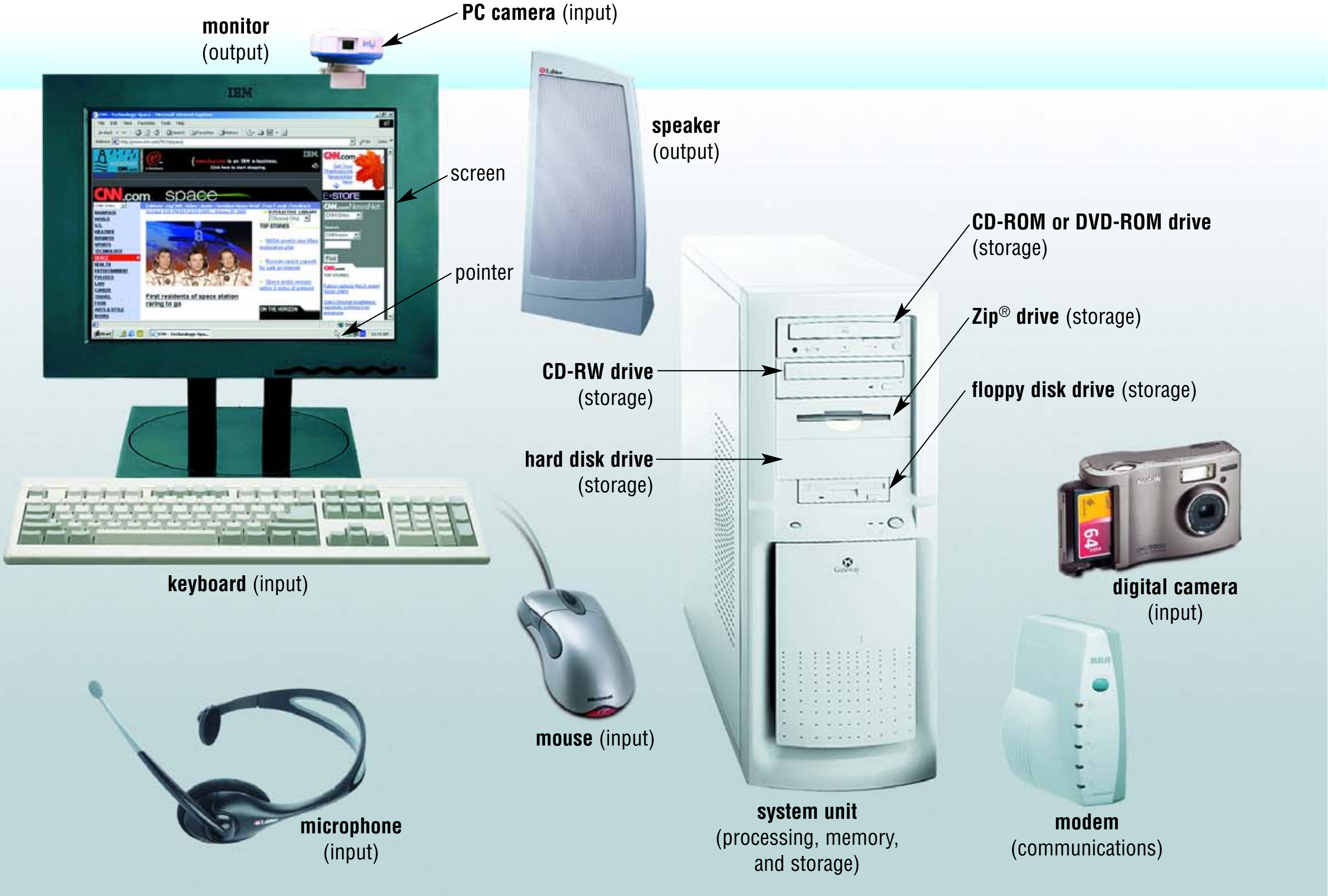
These hardware components include input devices, output devices, a system unit, storage devices, and communications devices. Figure 1-3 shows some common computer hardware components.

Input Devices

An **input device** is any hardware component that allows a user to enter data and instructions into a computer. Six commonly used input devices are the keyboard, mouse, microphone, scanner, digital camera, and PC camera (see Figure 1-3).

A computer keyboard contains keys that allow you to type letters of the alphabet, numbers, spaces, punctuation marks, and other symbols. A computer keyboard also contains other keys that allow you to enter data and instructions into the computer.

A mouse is a small handheld device that contains at least one button. The mouse controls the movement of a symbol on the screen called a pointer. For example, as you move the mouse across a flat surface, the pointer on the screen also moves. With the mouse, you can make choices, initiate a process, and select objects.



monitor (output)
PC camera (input)
speaker (output)
screen
pointer
CD-ROM or DVD-ROM drive (storage)
Zip® drive (storage)
CD-RW drive (storage)
floppy disk drive (storage)
hard disk drive (storage)
keyboard (input)
digital camera (input)
mouse (input)
microphone (input)
system unit (processing, memory, and storage)
modem (communications)

Figure 1-3 Common computer hardware components include a keyboard, mouse, microphone, PC camera, scanner, digital camera, system unit, disk drives, printer, monitor, speakers, and modem.

A microphone allows a user to speak to the computer to enter data and instructions into the computer. A scanner reads printed text and pictures and then translates the results into a form the computer can use. For example, you can scan a picture, and then include the picture when creating a brochure.

With a digital camera, you can take pictures and transfer the photographed image to the computer, instead of storing the images on traditional film. A PC camera is a digital video camera attached to a computer. This technology allows home users to edit videos, create a movie, and take digital still photographs on their computer. With a PC camera, you also can have video telephone calls — where someone can see you while communicating with you.

Output Devices

An **output device** is any hardware component that can convey information to a user. Three commonly used output devices are a printer, a monitor, and speakers (see Figure 1-3 on the previous page).

A printer produces text and graphics on a physical medium such as paper or transparency film. A monitor, which looks like a television screen, displays text, graphics, and video information. Speakers allow you to hear music, voice, and other sounds generated by the computer.

System Unit

The **system unit**, sometimes called a **chassis**, is a box-like case made from metal or plastic that protects the internal electronic components of the computer from damage (see Figure 1-3). The circuitry in the system unit usually is part of or is connected to a circuit board called the motherboard.

Two main components on the motherboard are the central processing unit and memory. The **central processing unit** (**CPU**), also called a **processor**, is the electronic device that interprets and carries out the basic instructions that operate the computer.

During processing, the processor places instructions to be executed and data needed by those instructions into memory. **Memory** is a temporary holding place for data and instructions.

Both the processor and memory consist of chips. A chip is an electronic device that contains many microscopic pathways that carry electrical current. Chips, which usually are no bigger than one-half inch square, are packaged so they can be attached to a motherboard or other circuit board (Figure 1-4).

Some computer components, such as the processor and memory, are internal and reside inside the system unit. Other components, such as the keyboard, mouse, microphone, monitor, printer, scanner, digital camera, and PC camera, often are located outside the system unit. These devices are considered external. A **peripheral** is any external device that attaches to the system unit.

Storage Devices

Storage holds data, instructions, and information for future use. Storage differs from memory, in that it can hold these items permanently. Memory, by contrast, holds items only temporarily while the processor interprets and executes them.

Web Link

For more information on input devices, visit the Discovering Computers 2002 Chapter 1 WEB LINK page (**scsite.com/dc2002/ch1/weblink.htm**) and click Input Devices.

Web Link

For more information on output devices, visit the Discovering Computers 2002 Chapter 1 WEB LINK page (**scsite.com/dc2002/ch1/weblink.htm**) and click Output Devices.

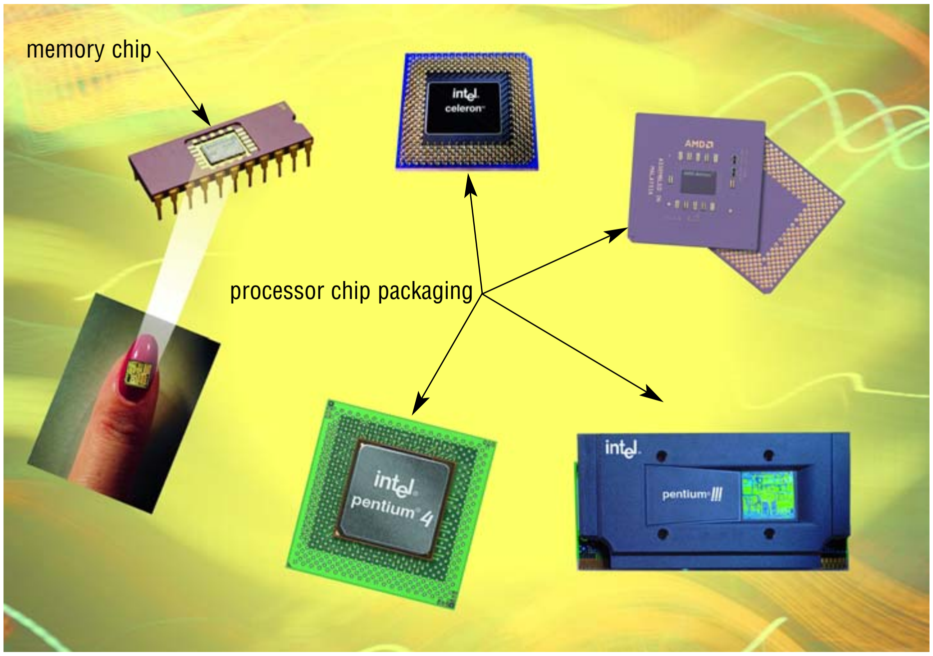


Figure 1-4 Chips are packaged so they may be attached to a circuit board.

A storage medium (media is the plural) is the physical material on which a computer keeps the data, instructions, and information. A **storage device** records and retrieves items to and from a storage medium. Storage devices often function as a source of input because they transfer items from storage into memory.

Six common storage devices are a floppy disk drive, a Zip® drive, a hard disk drive, a CD-ROM drive, a CD-RW drive, and a DVD-ROM drive (see Figure 1-3 on page 1.5). A drive is a device that reads from and may write onto a storage medium. This media includes floppy disks, Zip® disks, hard disks, and compact discs.

A floppy disk consists of a thin, circular, flexible disk enclosed in a plastic shell. A floppy disk stores data, instructions, and information using magnetic patterns. You insert and remove a floppy disk into and from a floppy disk drive (Figure 1-5). A Zip® disk is a higher capacity disk that can store the equivalent of up to 170 standard floppy disks.

A hard disk provides much greater storage capacity than a floppy disk. A hard disk usually consists of several circular platters that store items electronically. These disks are enclosed in an airtight, sealed case, which often is housed inside the system unit (Figure 1-6). Some hard disks are removable, which enables you to insert and remove the hard disk from a hard disk drive, much like a floppy disk (Figure 1-7). Removable disks are enclosed in plastic or metal cartridges so you can remove them from the drive. The advantage of removable media such as a floppy disk and removable hard disk is you can take the media out of the computer and transport or secure it.

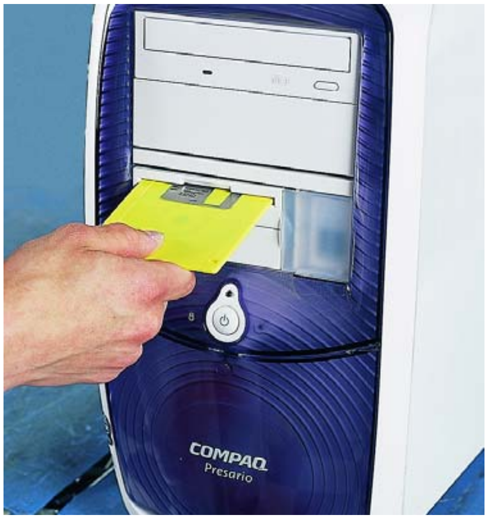


Figure 1-5 A floppy disk is inserted and removed from a floppy disk drive.

Web Link

For more information on processors, visit the Discovering Computers 2002 Chapter 1 WEB LINK page (**scsite.com/dc2002/ch1/weblink.htm**) and click Processors.

Web Link

For more information on storage devices, visit the Discovering Computers 2002 Chapter 1 WEB LINK page (**scsite.com/dc2002/ch1/weblink.htm**) and click Storage Devices.

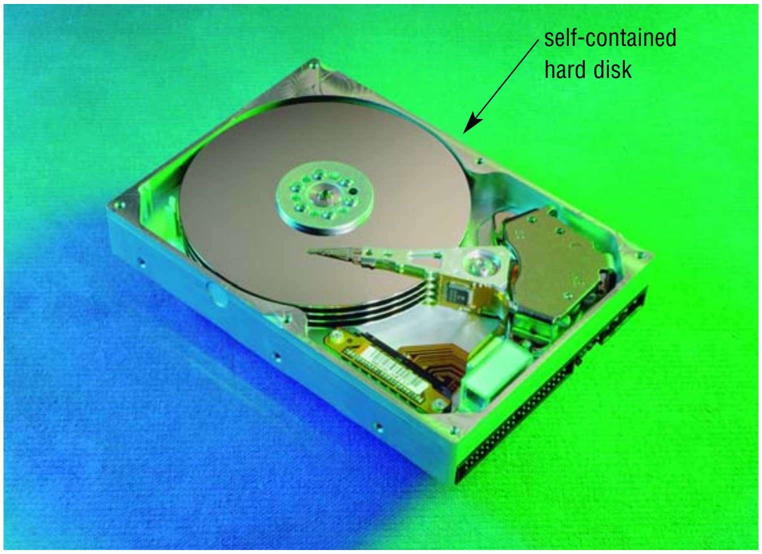


Figure 1-6 Most hard disks are self-contained devices housed inside the system unit.

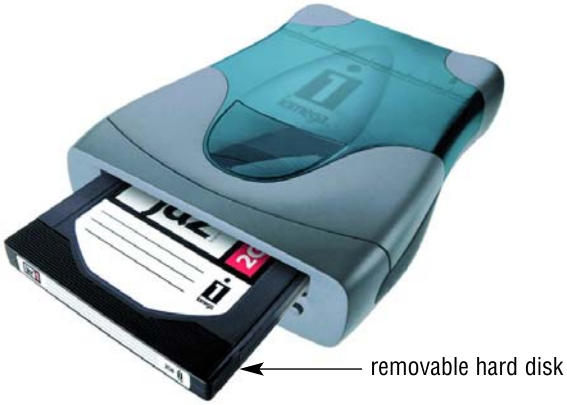


Figure 1-7 Removable hard disks are inserted and removed from a drive.

A compact disc is a flat, round, portable medium that stores data using microscopic pits, which are created by a laser light. One type of compact disc is a CD-ROM, which you access using a CD-ROM drive. A Picture CD is a special type of CD-ROM that stores digital versions of photographs for consumers.

A variation of the standard CD-ROM is the rewriteable CD, or CD-RW. In addition to accessing data, you also can erase and store data on a CD-RW. To use a CD-RW, you need a CD-RW drive. Another type of compact disc is a DVD-ROM, which has tremendous storage capacities — enough for a full-length movie. To use a DVD-ROM, you need a DVD-ROM drive (Figure 1-8).

Some devices, such as digital cameras, use miniature storage media (Figure 1-9). One popular type of miniature storage media is a card. You then can transfer the items, such as the digital photographs, from the media to your computer using a device called a card reader.

Communications Devices

Communications devices enable computer users to communicate and to exchange items such as data, instructions, and information with another computer.

A modem is a communications device that enables computers to communicate via telephone lines or cable. Modems are available as both external and internal devices.

Communications devices, such as modems, allow you to establish a connection between two computers and transmit items over transmission media, such as cables, telephone lines, or satellites.

ISSUE

School's Out

Communicating Information to Your Brain

One of Billboard's top songs of 1972 was Alice Cooper's *School's Out* . Flash forward in time to the future as portrayed in the movie *Matrix*. In this world, we find "no more teacher's dirty looks" because school is out forever. Do you want to learn Chinese? Simple! Use your wireless Web-enabled watch to connect to the education portal. Download the latest Chinese language unit. Connect your brain receptor to your watch and pour the knowledge into your brain. Within minutes, you speak several Chinese dialects. At the moment, this scenario is science fiction, but could it possibly be part of our future? Will education as we now know it eventually disappear? What other methods could be used so that knowledge could be "poured" into the brain?

For more information on communications, visit the Discovering Computers 2002 Issues Web page (**scsite.com/dc2002/issues.htm**) and click Chapter 1 Issue #1.

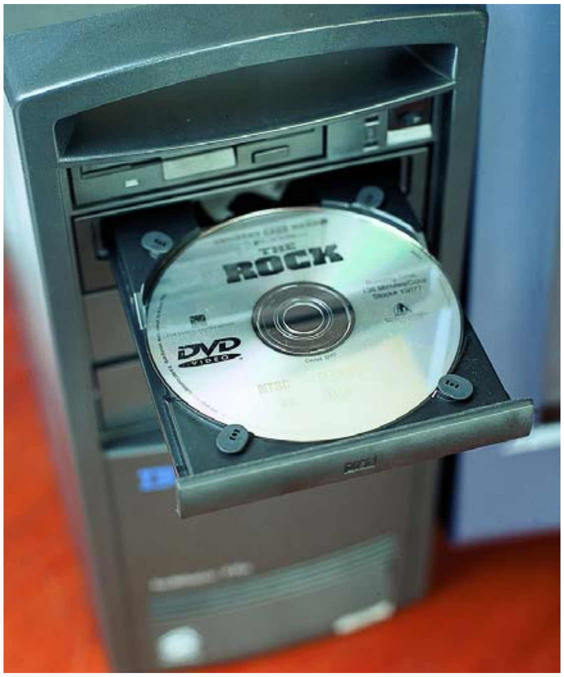


Figure 1-8 To use a DVD-ROM, you need a DVD-ROM drive.

WHY IS A COMPUTER SO POWERFUL?

A computer derives its power from its capability of performing the information processing cycle operations (input, process, output, and storage) with amazing speed, reliability, and accuracy; storing huge amounts of data and information; and communicating with other computers.

Speed

Inside the system unit, operations occur through electronic circuits. When data, instructions, and information flow along these circuits, they travel at close to the speed of light. This allows billions of operations to be carried out in a single second.

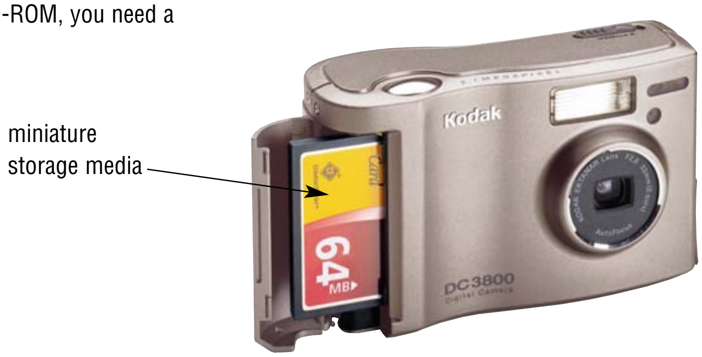


Figure 1-9 Many smaller devices, such as digital cameras, use miniature storage media.

Reliability

The electronic components in modern computers are dependable because they have a low failure rate. The high reliability of the components enables the computer to produce consistent results.

Accuracy

Computers can process large amounts of data and generate error-free results, provided the data is entered correctly and the program works properly. If data is inaccurate, the resulting output will be incorrect. A computing phrase — known as **garbage in, garbage out** (**GIGO**) — points out that the accuracy of a computer's output depends on the accuracy of the input.

Storage

Many computers can store enormous amounts of data and make this data available for processing any time it is needed. Using current storage devices, the computer can transfer data quickly from storage to memory, process it, and then store it again for future use.

Communications

Most computers today have the capability of communicating with other computers. Computers with this capability can share any of the four information processing cycle operations — input, process, output, and storage — with another computer. For example, two computers connected by a modem can share stored data, instructions, and information.

ISSUE

Computer Literacy — Important?

The Digital Revolution

In 1976, John Nevison (see URL below) coined the term computer literacy. In his article in Science magazine, he suggests an individual be called computer literate if he or she has written a computer program. Since that introduction more than 25 years ago, the definition of computer literacy has evolved, along with the numerous changes in technology. Many definitions of computer literacy exist today. These definitions range from knowing how to use the Internet, to knowing how a computer functions, to possessing the ability to use word processing software. How would you describe computer literacy? Should computer literacy be a required component of the general education requirements of a university or community college? Should computer literacy be introduced in K-12? If so, at what level? Some organizations suggest that the term information technology (IT) competency is a better description of the skills required for today's student. Do you agree? What knowledge and skills should someone have to be considered computer literate or IT competent?

For more information on computer literacy, information technology competencies, and the Web site mentioned above, visit the Discovering Computers 2002 Issues Web page (**scsite.com/dc2002/issues.htm**) and click Chapter 1 Issue #2.

Web Link

For more information on communications devices, visit the Discovering Computers 2002 Chapter 1 WEB LINK page (**scsite.com/dc2002/ch1/weblink.htm**) and click Communications Devices.

TECHNOLOGY TRAILBLAZER

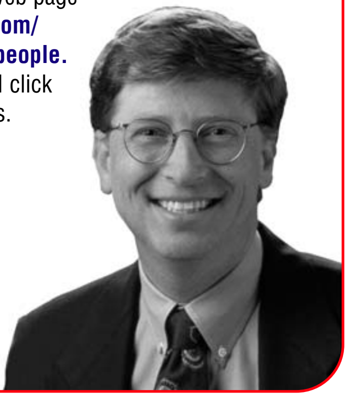
BILL GATES

What advice does one of the richest men in the world have for students? *Get the best education you can. Take advantage of high school and college. Learn how to learn.* As Microsoft's chairman and chief software architect, Bill Gates receives hundreds of e-mail messages from students asking for insight on education. He emphasizes that college graduates know about a multitude of subjects and group dynamics. Gates dropped out of Harvard during his junior year, but he stresses that students should not quit going to school unless they are facing extraordinary prospects.

Gates began programming computers when he was 13. Early in his career he developed the BASIC programming language for the MITS Altair, one of the first microcomputers. He founded Microsoft in 1975 with Paul Allen, and five years later they developed the first operating system for the IBM PC, called MS-DOS. Under Gates' leadership, Microsoft continued to update MS-DOS and then develop Windows, Internet Explorer, and the MSNBC cable television news network and corresponding Web site. Today he is regarded as the most powerful person in the computer industry.

Gates has written two books: *Business @ the Speed of Thought* and *The Road Ahead*. All proceeds have been donated to non-profit organizations. He and his wife have endowed more than $21 billion to the Bill and Melinda Gates Foundation, which supports global health and learning.

For more information on Bill Gates, visit the Discovering Computers 2002 People Web page (**scsite.com/dc2002/people.htm**) and click Bill Gates.



When two or more computers are connected together via communications media and devices, they form a network. The most widely known network is the Internet (Figure 1-10).

COMPUTER SOFTWARE

Software, also called a **computer program** or simply a **program**, is a series of instructions that tells the hardware of a computer what to do. Some instructions allow you to input data from the keyboard and direct the computer to store the data in memory. Other instructions cause data in memory to be used in calculations such as adding a series of numbers to obtain a total. Some instructions compare two values in memory and direct the computer to perform alternative operations based on the results of the comparison. Other instructions direct the computer to print a report, display information on the monitor, draw a color picture on the monitor, or store information on a disk.

A computer carries out, or **executes**, the instructions in a program by first placing, or loading, the instructions in the memory of the computer. Usually, the computer loads the instructions from storage into memory. For example, a program might load into memory from the hard disk each time you execute the program.

When you purchase a program, such as one shown in Figure 1-11, you typically receive media such as a CD-ROM(s) or a DVD-ROM that contains the software. Some programs

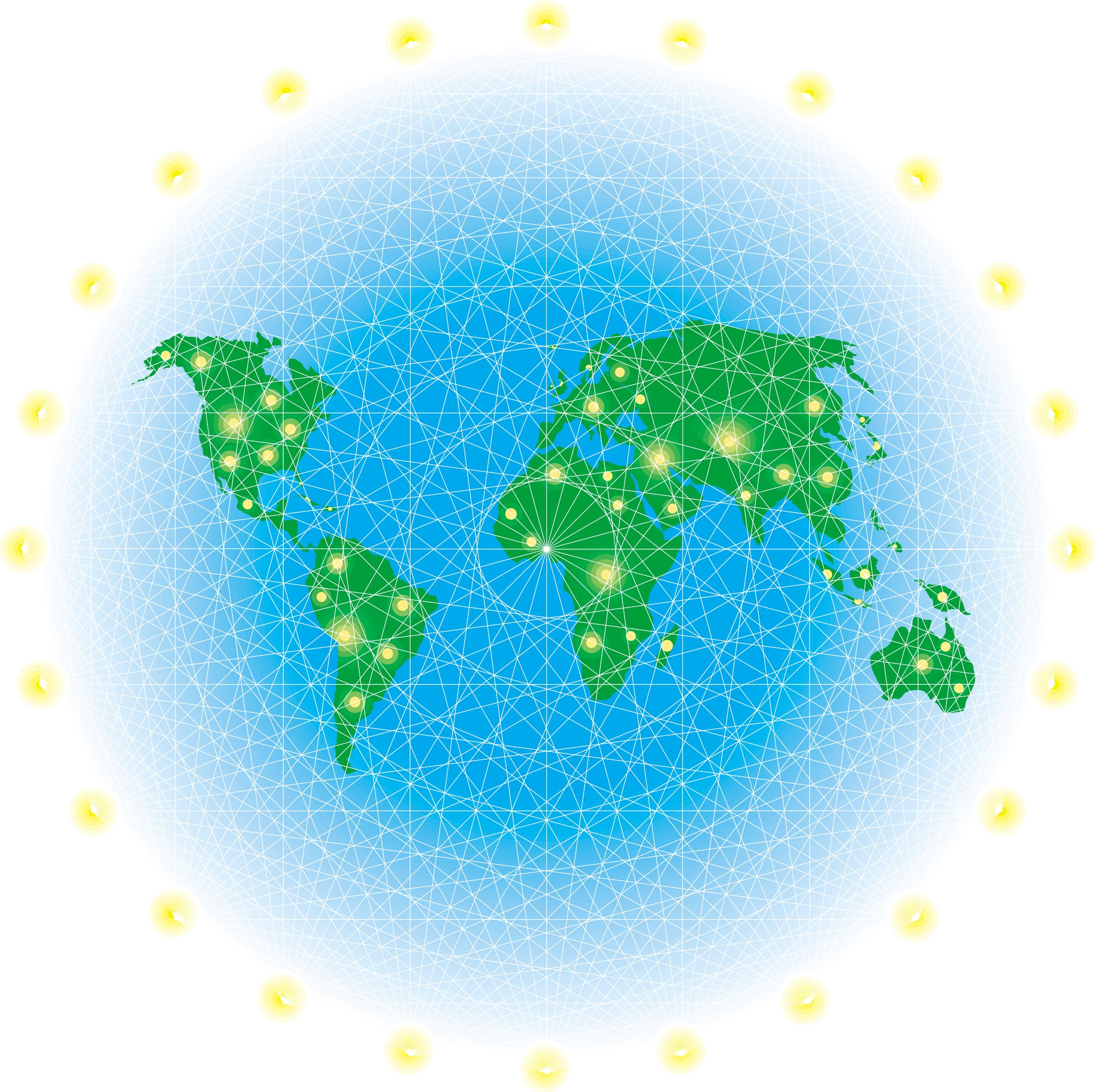


Figure 1-10 The Internet is a worldwide collection of networks that links together millions of businesses, government agencies, educational institutions, and individuals.

Figure 1-11 When you buy software, you receive media such as CD-ROMs or a DVD-ROM that contains the software program.

can load in memory directly from the media. With other programs, you must **install** a part or all of the software on the computer's hard disk before you can use the program. Some programs also require you insert the media, such as a CD-ROM, into the drive while you use, or run, the program. Others do not. Figure 1-12 shows the steps a user follows to run a computer program that allows you to create a greeting card. This program requires a CD-ROM in the CD-ROM drive.

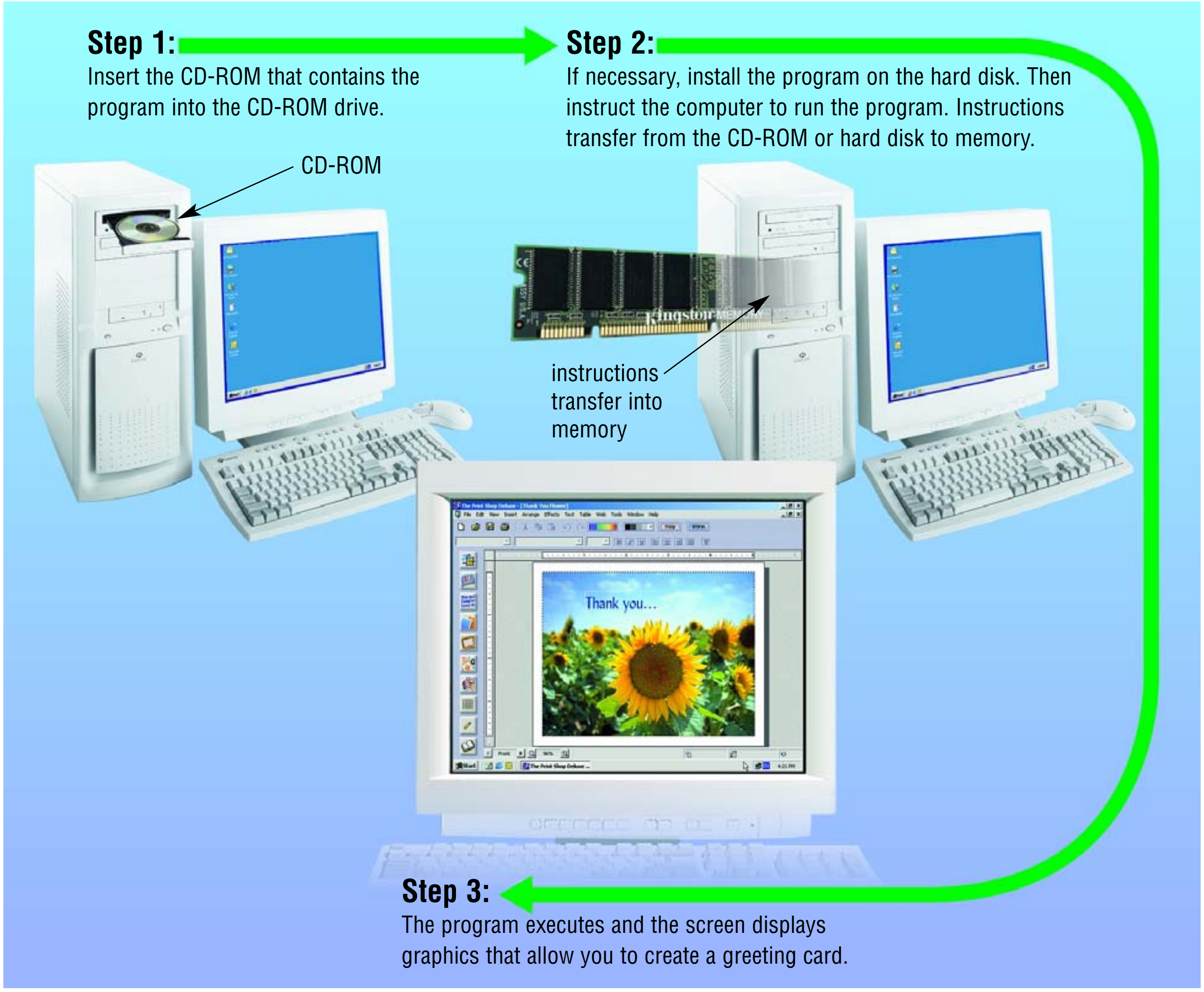
When you buy a computer, it usually has some software preinstalled on its hard disk. This enables you to use the computer as soon as you set it up.

Software is the key to productive use of computers. With the proper software, a computer can become a valuable tool. Two types of software exist: system software and application software. The following pages describe these categories of software.

Web Link

For more information on computer programs, visit the Discovering Computers 2002 Chapter 1 WEB LINK page (**scsite.com/dc2002/ch1/weblink.htm**) and click Computer Programs.

Figure 1-12 RUNNING A COMPUTER PROGRAM FROM A CD-ROM



Step 1:
Insert the CD-ROM that contains the program into the CD-ROM drive.

Step 2:
If necessary, install the program on the hard disk. Then instruct the computer to run the program. Instructions transfer from the CD-ROM or hard disk to memory.

Step 3:
The program executes and the screen displays graphics that allow you to create a greeting card.

System Software

System software consists of the programs that control the operations of the computer and its devices. System software serves as the interface between the user, the application software, and the computer's hardware. Two types of system software are the operating system and utility programs.

OPERATING SYSTEM An **operating system** (**OS**) is a set of programs containing instructions that coordinate all the activities among computer hardware devices. The operating system also contains instructions that allow you to run application software. Many of today's computers use the Microsoft Windows operating system.

When you start a computer, the operating system loads into memory from the computer's hard disk. It remains in memory while the computer is running and allows you to communicate with the computer and other software.

UTILITY PROGRAMS A **utility program** is a type of system software that performs a specific task, usually related to managing a computer, its devices, or its programs. An example of a utility program is an uninstaller, which removes a program that has been installed on a computer. Most operating systems include several utility programs for managing disk drives, printers, and other devices. You also can buy stand-alone utility programs to perform additional computer management functions.

USER INTERFACE You interact with software through its user interface. The user interface controls how you enter data and instructions and how information displays on the screen. Many of today's software programs have a graphical user interface. With a **graphical user interface** (**GUI** pronounced gooey), you interact with the software using visual images such as icons. An **icon** is a small image that represents a program, an instruction, or some other object. You can select icons with the mouse to perform operations such as starting a program. Figure 1-13 shows the graphical user interface of the Microsoft Windows operating system.

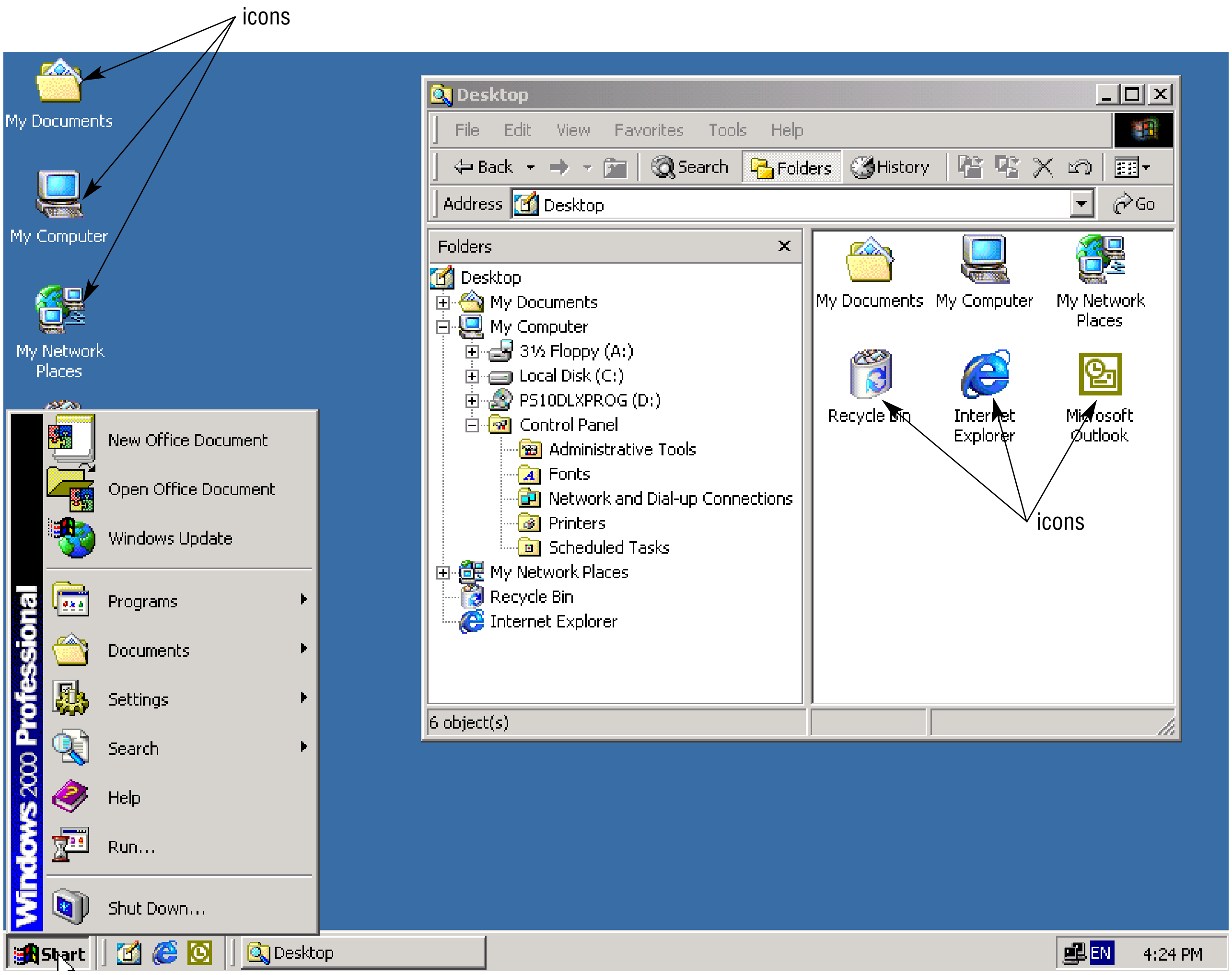


Figure 1-13 Microsoft Windows is an operating system that has a graphical user interface.

Application Software

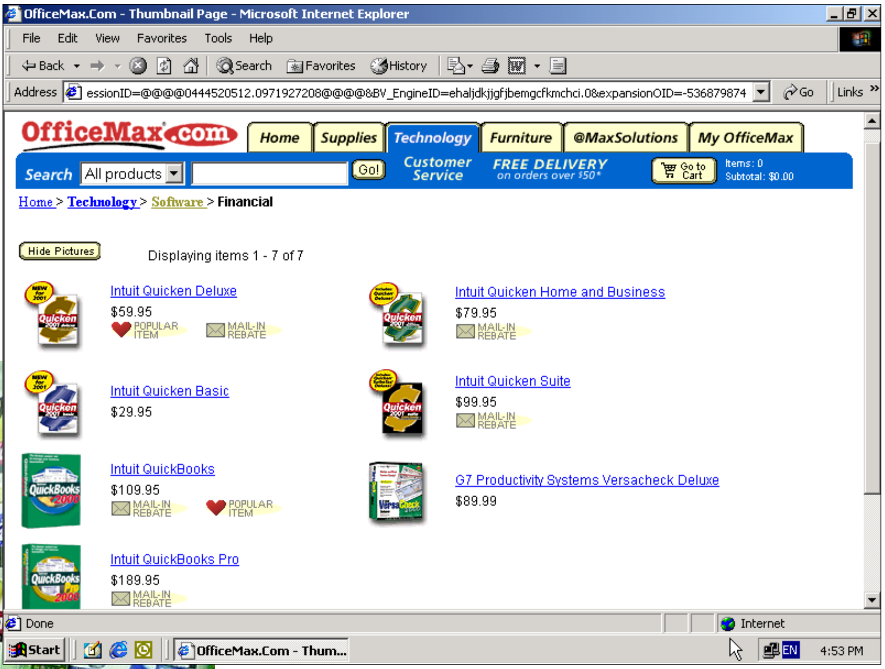
Application software consists of programs that perform specific tasks for users. Popular application software includes word processing software, spreadsheet software, database software, and presentation graphics software. Word processing software allows you to create documents such as letters, memorandums, and brochures. Spreadsheet software allows you to calculate numbers arranged in rows and columns. Users perform financial tasks such as budgeting and forecasting with spreadsheet software. Database software allows you to store data in an organized fashion, as well as retrieve, manipulate, and display that data in a variety of formats. With presentation graphics software, you create documents called slides that add visual appeal to presentations. Software vendors often bundle and sell these four applications together as a single unit. This bundle, called a suite, costs much less than if you purchased the applications individually.

Many other types of application software exist that enable users to perform a variety of tasks. Some widely used applications include the following: reference, education, and entertainment; desktop publishing; photo and video editing; multimedia authoring; network, communications, electronic mail (e-mail), and Web browsers; accounting; project management; and personal information management. Chapter 2 discusses Web browsers and e-mail, and Chapter 3 discusses the other applications.

Application software is available in a variety of forms: packaged, custom, freeware, public domain, shareware, and from application service providers.

PACKAGED SOFTWARE **Packaged software** is copyrighted retail software that meets the needs of a wide variety of users, not just a single user or company. You can purchase packaged software from stores that sell computer products (Figure 1-14a). You also can purchase packaged software from companies on the Internet (Figure 1-14b).

Figure 1-14b (online computer store)



OfficeMax.Com - Thumbnail Page - Microsoft Internet Explorer

Address: essionID=@@@@0444520512.0971927208@@@@&BV_EngineID=ehaljdkjjgfjbemgcfkmchci.0&expansionOID=-536879874

Home > Technology > Software > Financial

Displaying items 1 - 7 of 7

Intuit Quicken Deluxe
$59.95

Intuit Quicken Home and Business
$79.95

Intuit Quicken Basic
$29.95

Intuit Quicken Suite
$99.95

Intuit QuickBooks
$109.95

G7 Productivity Systems Versacheck Deluxe
$89.99

Intuit QuickBooks Pro
$189.95

Figure 1-14a (computer store)

Figure 1-14 Packaged software programs can be purchased from computer stores, office equipment suppliers, retailers, and software vendors. Many stores, such as OfficeMax shown in this figure, allow you to purchase software programs on the Internet.

Web Link

For more information on application software, visit the Discovering Computers 2002 Chapter 1 WEB LINK page (**scsite.com/dc2002/ch1/weblink.htm**) and click Application Software.

CUSTOM SOFTWARE Sometimes a user or company with unique software requirements cannot find packaged software that meets all its needs. In this case, the person or company can opt for custom software. **Custom software**, written by a programmer, is a tailor-made program developed at a user's request to perform specific functions.

FREEWARE, PUBLIC-DOMAIN SOFTWARE, AND SHAREWARE

Freeware is software provided at no cost to a user by an individual or company. Freeware is copyrighted. You cannot resell it as your own. **Public-domain software** also is free software, but it has been donated for public use and has no copyright restrictions.

Shareware is copyrighted software that is distributed free for a trial period. If you want to use a shareware program beyond that period of time, you send a payment to the person or company that developed the program. Companies that develop shareware rely on the honor system. The company trusts you to send payment if you continue to use the software beyond the stated trial period. Upon sending this small fee, the developer registers you to receive service assistance and updates.

Examples of shareware, freeware, and public-domain software include utility programs, graphics programs, and games. Thousands of these programs are available on the Internet to download, or copy to your computer. You also can obtain copies of these programs from the developer, a coworker, or a friend.

APPLICATION SERVICE PROVIDER Storing and maintaining programs can be a costly investment for individuals and businesses. Some opt to use an application service provider for their software needs. An **application service provider** (**ASP**) is a third-party company that manages and distributes software and services on the Internet. That is, instead of installing the software on your computer, you run the programs from the Internet. Some vendors provide access to the software at no cost. Others charge for use of the program.

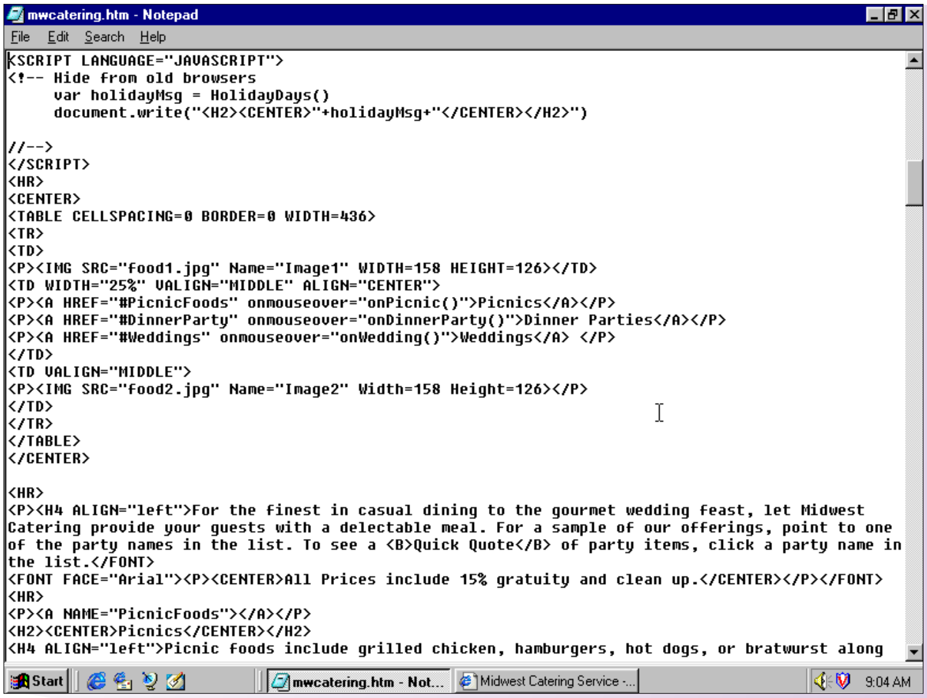
Software Development

A **computer programmer**, also called a **programmer**, is someone who writes software programs. Programmers write the instructions that direct the computer to process data into information. A programmer must place instructions in the correct sequence so the computer generates the desired results. Complex programs can require hundreds of thousands of program instructions.

When writing complex programs for large businesses, programmers often follow a plan developed by a systems analyst. A **systems analyst** designs a program, working with both the user and the programmer to determine the desired output of the program.

Programmers use a programming language to write computer programs. Some programming languages, such as JavaScript, allow programmers to develop applications that run on the Internet. Figure 1-15 shows an Internet application and the instructions the programmer writes to create the application.

Figure 1-15a (JavaScript program)



```
<SCRIPT LANGUAGE="JAVASCRIPT">
<!-- Hide from old browsers
     var holidayMsg = HolidayDays()
     document.write("<H2><CENTER>"+holidayMsg+"</CENTER></H2>")

//-->
</SCRIPT>
<HR>
<CENTER>
<TABLE CELLSPACING=0 BORDER=0 WIDTH=436>
<TR>
<TD>
<P><IMG SRC="food1.jpg" Name="Image1" WIDTH=158 HEIGHT=126></TD>
<TD WIDTH="25%" VALIGN="MIDDLE" ALIGN="CENTER">
<P><A HREF="#PicnicFoods" onmouseover="onPicnic()">Picnics</A></P>
<P><A HREF="#DinnerParty" onmouseover="onDinnerParty()">Dinner Parties</A></P>
<P><A HREF="#Weddings" onmouseover="onWedding()">Weddings</A> </P>
</TD>
<TD VALIGN="MIDDLE">
<P><IMG SRC="food2.jpg" Name="Image2" Width=158 Height=126></P>
</TD>
</TR>
</TABLE>
</CENTER>

<HR>
<P><H4 ALIGN="left">For the finest in casual dining to the gourmet wedding feast, let Midwest
Catering provide your guests with a delectable meal. For a sample of our offerings, point to one
of the party names in the list. To see a <B>Quick Quote</B> of party items, click a party name in
the list.</FONT>
<FONT FACE="Arial"><P><CENTER>All Prices include 15% gratuity and clean up.</CENTER></P></FONT>
<HR>
<P><A NAME="PicnicFoods"></A></P>
<H2><CENTER>Picnics</CENTER></H2>
<H4 ALIGN="left">Picnic foods include grilled chicken, hamburgers, hot dogs, or bratwurst along
```

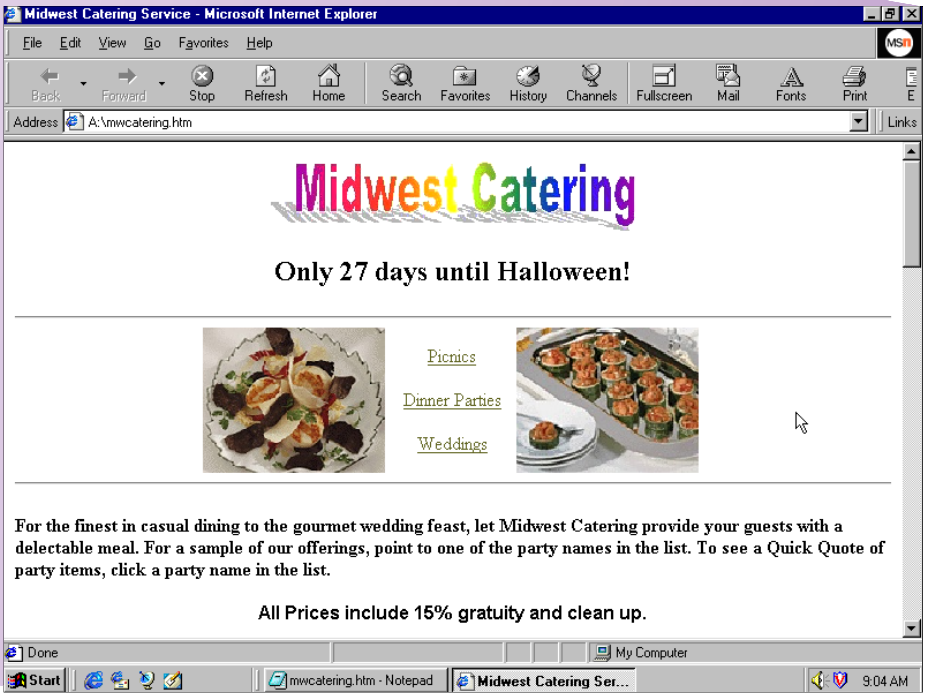
Figure 1-15 This figure illustrates an Internet application and the instructions a programmer writes in JavaScript to create the application.

The Computer Can Do It

Computer Software

Popular theory says that if an auditorium full of monkeys each were given a typewriter, eventually they would produce a classic novel. Monkeys may or may not be able to emulate Shakespeare, but today's computers can perform assignments once thought exclusively human. Computers have been programmed to read written work and answer questions, demonstrating comprehension. One computer has been programmed to paint, producing pictures that have sold for more than $20,000. Computer-controlled robots can play soccer. The computerized WARREN system (see URL below) helps you manage your investment portfolio. What types of activities or problems, if any, still do not embrace computer involvement? Why? Will computers someday be capable of handling these activities or problems? Why or why not?

For more information on the application of computers and the Web site mentioned above, visit the Discovering Computers 2002 Issues Web page (**scsite.com/dc2002/issues.htm**) and click Chapter 1 Issue #3.



Midwest Catering

Only 27 days until Halloween!

Picnics

Dinner Parties

Weddings

For the finest in casual dining to the gourmet wedding feast, let Midwest Catering provide your guests with a delectable meal. For a sample of our offerings, point to one of the party names in the list. To see a Quick Quote of party items, click a party name in the list.

All Prices include 15% gratuity and clean up.

Figure 1-15b (Internet application)

APPLY IT!

Software – Purchase it Packaged, Subscribe, or Download?

Buying software used to be simple — you either purchased it from a local store or ordered it for delivery. You still have these options, but others have emerged. Providing the consumer the option to purchase and download software via the Internet, for example, is becoming standard practice for many online companies. Alternatively, Microsoft.NET is Microsoft's recent business strategy aimed at making Microsoft's existing software available on the Internet. With the Microsoft option, the user subscribes to and uses only the programs and data needed. If you are in the market to purchase or upgrade software and are unsure which option is best for you, consider the following:

- Purchasing packaged software
    - Pros: physical media in hand, easy to reinstall, does not require online access
    - Cons: limited to one computer, requires registration for upgrades, media may become damaged or lost
- Downloading from the Internet
    - Pros: easy to do, accessible 24 hours — the store is always open, easy to upgrade
    - Cons: service interruption while downloading, requires credit card information be posted online, hardware problems — reinstallation, need to download user manual
- Subscribing to and using Internet-based software
    - Pros: latest versions, accessible from any location with Internet access, access to online help, subscription not limited to one computer, use only the program and features you need
    - Cons: online access required, requires credit card information be posted online, data security, need to download user manual

For more information on software downloading or purchasing, visit the Discovering Computers 2002 Apply It Web page (**scsite.com/dc2002/apply.htm**) and click Chapter 1 Apply It #1.

NETWORKS AND THE INTERNET

A **network** is a collection of computers and devices connected together via communications devices and media. A modem is an example of a communications device. Examples of communications media are cables, telephone lines, cellular radio, and satellites. Some of these media, such as satellites and cellular radio, are wireless, which means they have no physical lines or wires. When your computer connects to a network, you are considered **online**.

Networks allow users to share **resources**, such as hardware devices, software programs, data, and information. Sharing resources saves time and money. For example, instead of purchasing one printer for every computer in a company or in a home, you can connect a single printer and all computers via a network (Figure 1-16). This type of network enables all of the computers to access the same printer.

Most businesses network their computers together. These networks can be relatively small or quite extensive. A local area network (LAN) is a network that connects computers in a limited geographic area, such as a school computer laboratory, office, or group of buildings. A wide area network (WAN) is a network that covers a large geographical area, such as one that connects the district offices across the country (Figure 1-17).

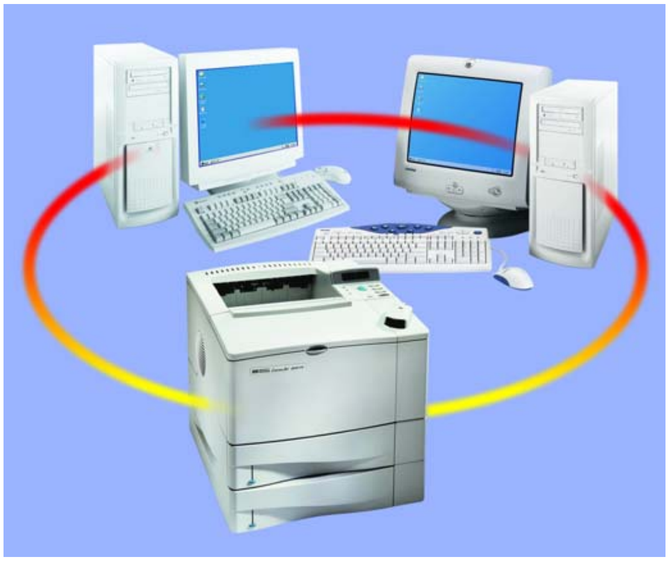


Figure 1-16 This local area network (LAN) enables two separate computers to share the same printer.

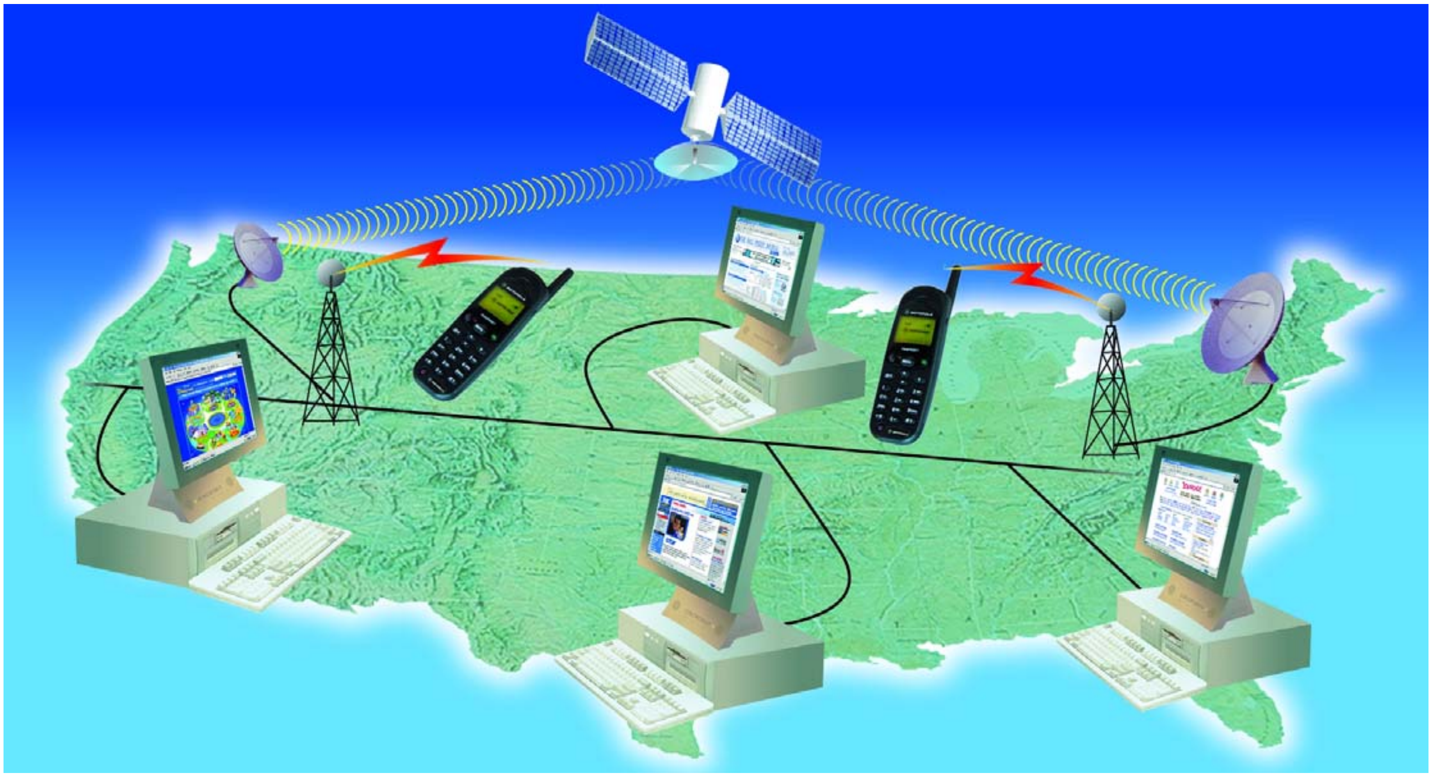


Figure 1-17 A network can be quite large and complex, connecting users in district offices around the country.

The world's largest network is the Internet. The **Internet** is a worldwide collection of networks that links together millions of businesses, government agencies, educational institutions, and individuals. With an abundance of resources and data accessible via the Internet, more than 360 million users around the world are making use of the Internet for a variety of reasons, some of which include the following (Figure 1-18):

- Sending messages to other connected users
- Accessing a wealth of information, such as news, maps, airline schedules, and stock market data
- Shopping for goods and services
- Meeting or conversing with people around the world
- Accessing sources of entertainment and leisure, such as online games, music, books, magazines, and vacation planning guides

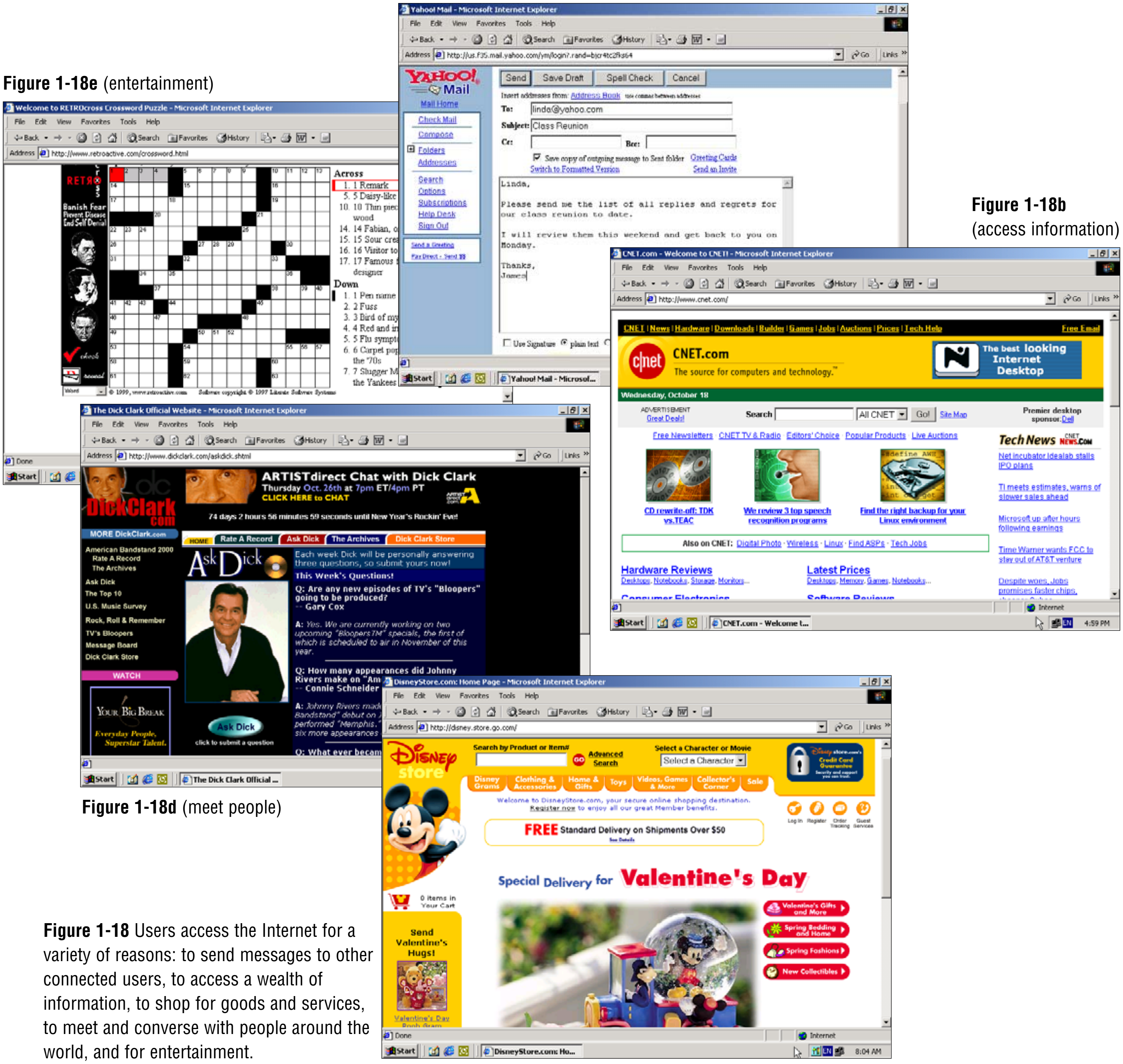


Figure 1-18a (send a message)

Yahoo! Mail - Microsoft Internet Explorer

Address: http://us.f35.mail.yahoo.com/ym/login?.rand=bjcr4tc2fks64

To: linda@yahoo.com

Subject: Class Reunion

☑ Save copy of outgoing message to Sent folder

Linda,

Please send me the list of all replies and regrets for our class reunion to date.

I will review them this weekend and get back to you on Monday.

Thanks,
James

Figure 1-18b (access information)

CNET.com - Welcome to CNET! - Microsoft Internet Explorer

Address: http://www.cnet.com/

CNET.com
The source for computers and technology.™

Wednesday, October 18

CD rewrite-off: TDK vs.TEAC

We review 3 top speech recognition programs

Find the right backup for your Linux environment

Tech News

Net incubator Idealab stalls IPO plans

TI meets estimates, warns of slower sales ahead

Microsoft up after hours following earnings

Time Warner wants FCC to stay out of AT&T venture

Despite woes, Jobs promises faster chips,

CNET | News | Hardware | Downloads | Builder | Games | Jobs | Auctions | Prices | Tech Help
Free Email
The best looking Internet Desktop
ADVERTISEMENT
Great Deals!
Search
All CNET
Go!
Site Map
Premier desktop sponsor: Dell
Free Newsletters · CNET TV & Radio · Editors' Choice · Popular Products · Live Auctions
Also on CNET: Digital Photo · Wireless · Linux · Find ASPs · Tech Jobs
Hardware Reviews
Desktops, Notebooks, Storage, Monitors...
Latest Prices
Desktops, Memory, Games, Notebooks...
4:59 PM

Figure 1-18c (shop)

DisneyStore.com: Home Page - Microsoft Internet Explorer

Address: http://disney.store.go.com/

Welcome to DisneyStore.com, your secure online shopping destination. Register now to enjoy all our great Member benefits.

FREE Standard Delivery on Shipments Over $50

Special Delivery for Valentine's Day

Figure 1-18d (meet people)

The Dick Clark Official Website - Microsoft Internet Explorer

Address: http://www.dickclark.com/askdick.shtml

ARTISTdirect Chat with Dick Clark
Thursday Oct. 26th at 7pm ET/4pm PT
CLICK HERE to CHAT

74 days 2 hours 56 minutes 59 seconds until New Year's Rockin' Eve!

Each week Dick will be personally answering three questions, so submit yours now!

This Week's Questions!

Q: Are any new episodes of TV's "Bloopers" going to be produced?
-- Gary Cox

A: Yes. We are currently working on two upcoming "Bloopers™" specials, the first of which is scheduled to air in November of this year.

Q: How many appearances did Johnny Rivers make on "Am
-- Connie Schneider

A: Johnny Rivers made Bandstand" debut on performed "Memphis." six more appearances

Q: What ever becam

Figure 1-18e (entertainment)

Welcome to RETROcross Crossword Puzzle - Microsoft Internet Explorer

Address: http://www.retroactive.com/crossword.html

Across
1. 1 Remark
5. 5 Daisy-like
10. 10 Thin piec wood
14. 14 Fabian, o
15. 15 Sour crea
16. 16 Visitor to
17. 17 Famous designer

Down
1. 1 Pen name
2. 2 Fuss
3. 3 Bird of my
4. 4 Red and ir
5. 5 Flu sympt
6. 6 Carpet pop the '70s
7. 7 Slugger M the Yankees

© 1999, www.retroactive.com Software copyright © 1997 Literate Software Systems

Figure 1-18 Users access the Internet for a variety of reasons: to send messages to other connected users, to access a wealth of information, to shop for goods and services, to meet and converse with people around the world, and for entertainment.

Most users connect to the Internet in one of two ways: through an Internet service provider or through an online service provider. An Internet service provider (ISP) is a company that supplies connections to the Internet, usually for a monthly fee. An online service provider (OSP) also provides access to the Internet, as well as a variety of other specialized content and services such as financial data, hardware and software guides, news, weather, legal information, and other similar commodities. For this reason, the fees for using an OSP sometimes are slightly higher than fees for using an ISP. Two popular OSPs are America Online and The Microsoft Network.

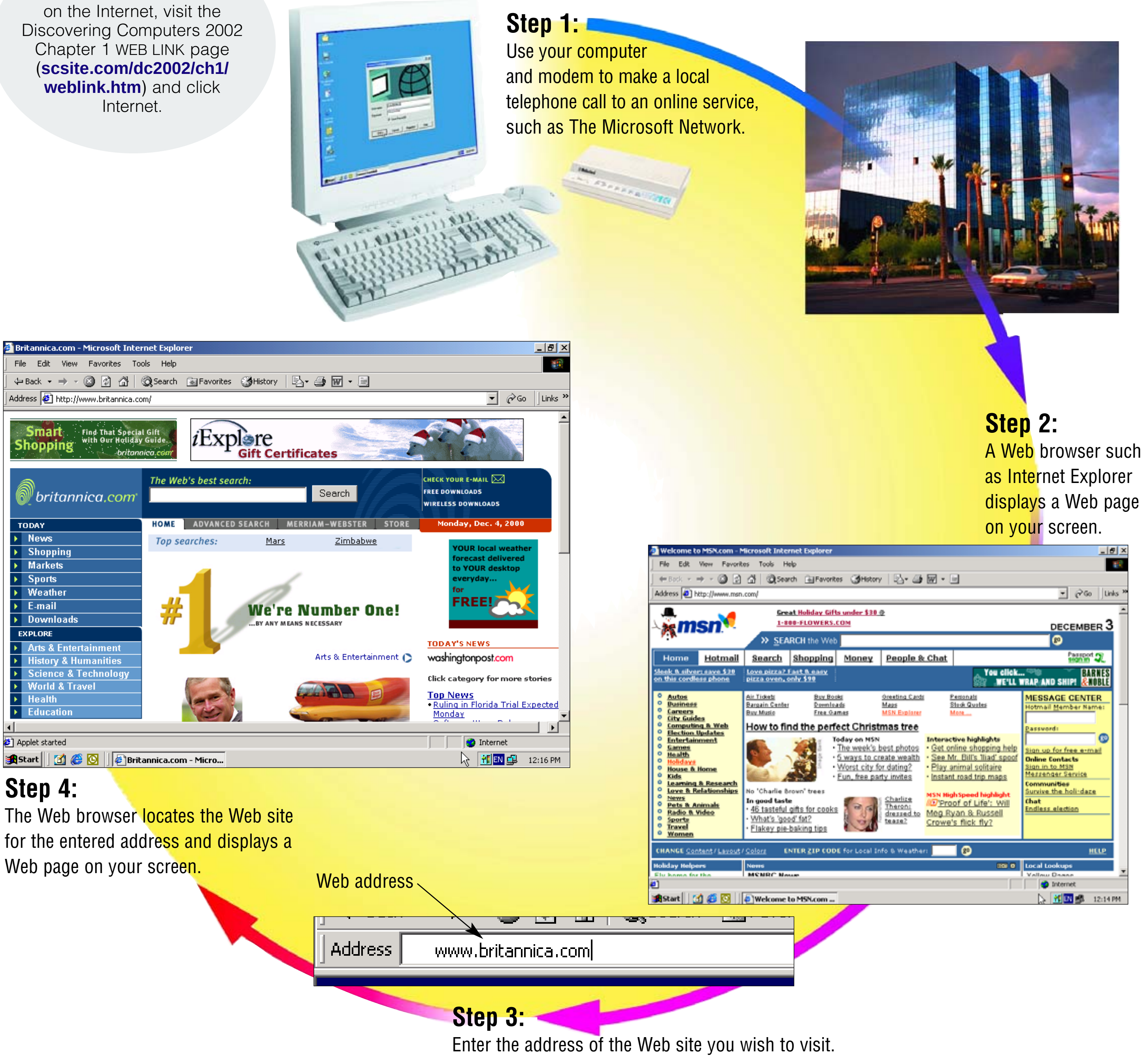
One of the more popular segments of the Internet is the World Wide Web, also called the Web. The Web contains billions of documents called Web pages. A Web page contains text, graphics, sound, or video, and has built-in connections, or links, to other Web documents. Computers throughout the world store Web pages. The screens shown in Figure 1-18 on the previous page are examples of Web pages.

A Web site is a collection of related Web pages. You access and view Web pages using a software program called a Web browser. The two most popular Web browsers are Microsoft Internet Explorer and Netscape Navigator. Figure 1-19 illustrates one method of connecting to the Web and displaying a Web page.

Web Link

For more information on the Internet, visit the Discovering Computers 2002 Chapter 1 WEB LINK page (**scsite.com/dc2002/ch1/weblink.htm**) and click Internet.

Figure 1-19 CONNECTING TO THE INTERNET AND DISPLAYING A WEB PAGE



Step 1:
Use your computer and modem to make a local telephone call to an online service, such as The Microsoft Network.

Step 2:
A Web browser such as Internet Explorer displays a Web page on your screen.

Step 3:
Enter the address of the Web site you wish to visit.

Step 4:
The Web browser locates the Web site for the entered address and displays a Web page on your screen.

Web address
Address www.britannica.com
Britannica.com - Microsoft Internet Explorer
http://www.britannica.com/
Welcome to MSN.com - Microsoft Internet Explorer
http://www.msn.com/

CATEGORIES OF COMPUTERS

The six major categories of computers are personal computers, handheld computers, Internet appliances, mid-range servers, mainframes, and supercomputers. These categories are based on the differences in the size, speed, processing capabilities, and price of computers. Due to rapidly changing technology, the categories cannot be defined precisely. For example, the speed that defines a mainframe today may define a mid-range server next year. Some characteristics may overlap categories. Still, many people refer to these categories when discussing computers.

Figure 1-20 summarizes the six categories of computers, and the following pages discuss them.

Category	Physical size	Number of simultaneously connected users	General price range
Personal computer (desktop or notebook)	Fits on a desk or on your lap	Usually one, or many networked	Several thousand dollars or less
Handheld computer	Fits in your hand	Usually one	Several hundred dollars or less
Internet appliance	Fits on a countertop	Usually one	Several hundred dollars or less
Mid-range server	Small cabinet	Two to thousands	$5,000 to $150,000
Mainframe	Partial room to a full room of equipment	Hundreds to thousands	$300,000 to several million dollars
Supercomputer	Full room of equipment	Hundreds to thousands	Several million dollars and up

Figure 1-20 This table summarizes some of the differences among the categories of computers. These should be considered general guidelines only because of rapid changes in technology.

PERSONAL COMPUTERS

A **personal computer** is a computer that can perform all of its input, processing, output, and storage activities by itself. A personal computer contains at least one input device, one output device, one storage device, memory, and a processor. On a personal computer, all of the processor's functions typically reside on a single chip, often called a microprocessor. The processor is the basic building block of a personal computer.

Two popular series of personal computers are the PC (Figure 1-21) and the Apple Macintosh (Figure 1-22). These two types

Figure 1-21 The PC and compatibles use the Windows operating system.

Figure 1-22 The Apple Macintosh uses the Macintosh operating system.

of computers have different processors and use different operating systems. The PC and compatibles use the Windows operating system. The Apple Macintosh uses the Macintosh operating system (Mac OS). Today, the terms PC and compatible refer to any personal computer that is based on specifications of the original IBM personal computer. Companies such as Gateway, Compaq, Dell, and Toshiba all sell PC-compatible computers.

Two major categories of personal computers are desktop computers and notebook computers. The next two sections discuss these types of personal computers.

Desktop Computers

A **desktop computer** is designed so the system unit, input devices, output devices, and any other devices fit entirely on or under a desk or table (Figure 1-23). In some models, the monitor sits on top of the system unit, which is placed on top of the desk. A **tower model**, by contrast, has a tall and narrow system unit that can sit on the floor vertically — if space is limited on your desktop. Tower model desktop computers are available in a variety of heights: a full tower is at least 24 inches tall, a mid-tower is about 16 inches tall, and a mini-tower is usually 13 inches tall. The model of desktop computer you use often depends on the design of your workspace.

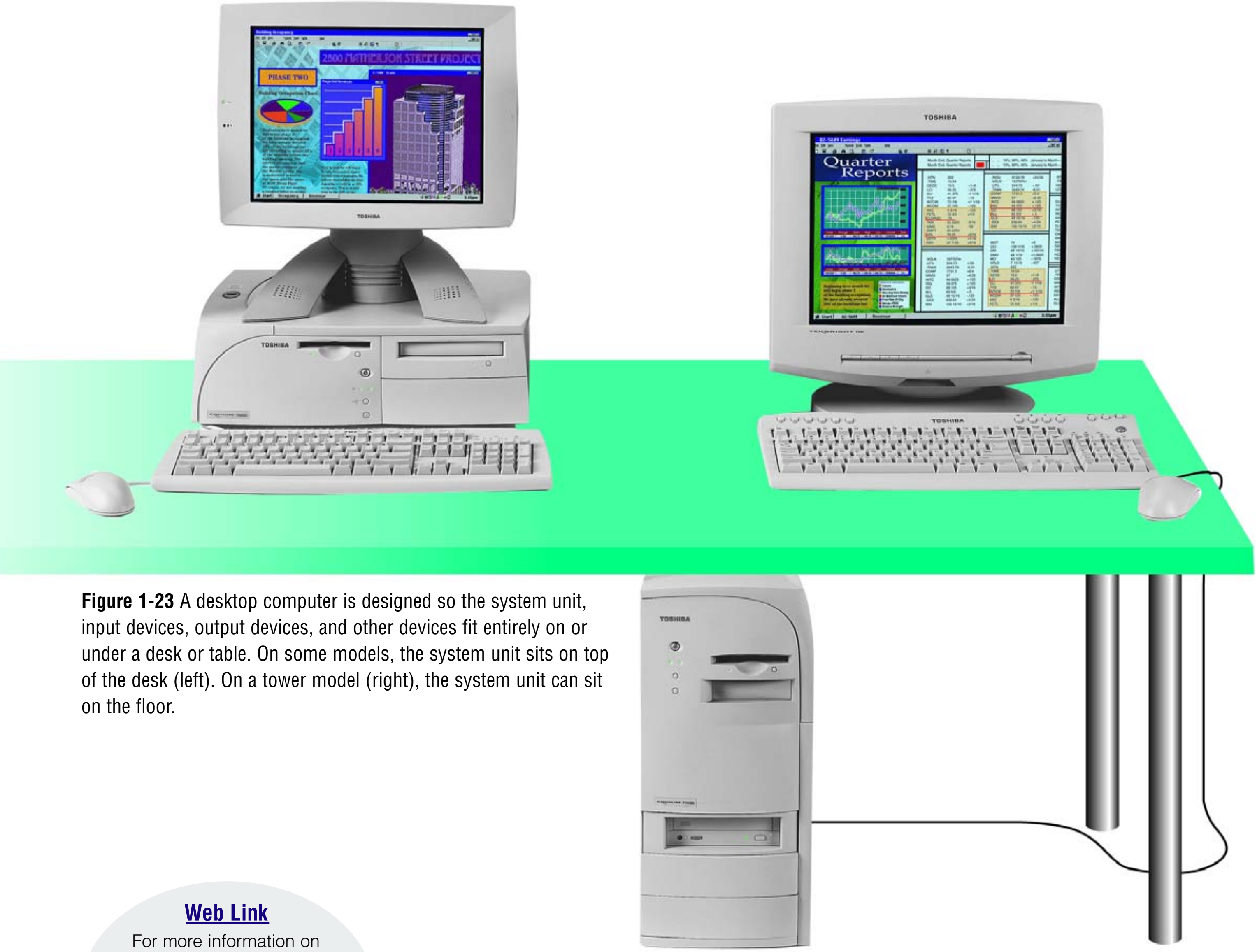


Figure 1-23 A desktop computer is designed so the system unit, input devices, output devices, and other devices fit entirely on or under a desk or table. On some models, the system unit sits on top of the desk (left). On a tower model (right), the system unit can sit on the floor.

Web Link

For more information on personal computers, visit the Discovering Computers 2002 Chapter 1 WEB LINK page (**scsite.com/dc2002/ch1/weblink.htm**) and click Personal Computers.

An **all-in-one computer** is a less expensive desktop computer that combines the monitor and system unit into a single device (Figure 1-24). These compact computers are ideal for the casual home user.

A **workstation** is a more expensive and powerful desktop computer designed for work that requires intense calculations and graphics capabilities. Users in fields such as engineering, desktop publishing, and graphic art use workstations. An architect uses a workstation to view and create maps. A graphic artist uses a workstation to create computer-animated special effects for Hollywood movies.

A **stand-alone computer** is a computer that can perform the information processing cycle operations (input, process, output, and storage) without being connected to a network. Most stand-alone desktop computers today also have networking capabilities.

Some desktop computers also are powerful enough to function as a server on a network. A **server** is a computer that manages the resources on a network. Servers control access to the software, printers, and other devices on the network. Servers also provide a centralized storage area for software programs and data. The other computers on the network, called

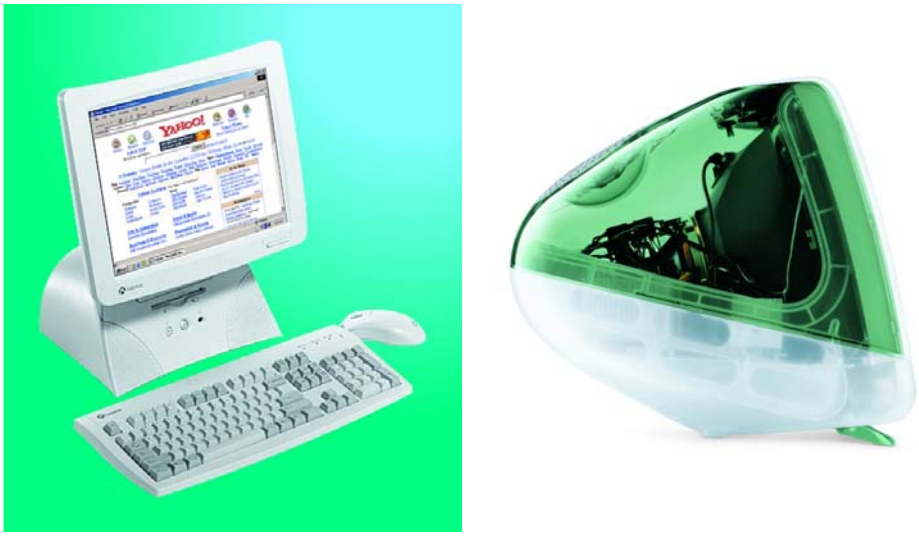


Figure 1-24 An all-in-one computer is a less expensive desktop computer that combines the monitor and system unit into a single device.

COMPANY ON THE CUTTING EDGE

Gateway

Mooo-ving Beyond the PC Box

Cow-spotted boxes are festive icons in the computer world. Gateway's trademark shipping cartons mean only one thing: a personal computer from one of the world's leading technology manufacturers.

From its humble beginnings as a two-person operation in a Sioux City, Iowa, farmhouse, Gateway has grown to a 20,000-employee Fortune 250 company. Founder Ted Waitt had the unique vision to manufacture built-to-order PCs. With a warehouse of parts to build systems, Gateway offers customers exactly what they want. Consumers from Asia, Europe, and the United States order more than 11,000 custom systems daily via the Internet, the telephone, or at Gateway Country stores. Inventory is replenished about 40 times yearly.

The company realizes that the hardware is only a tool that helps users play, work, and learn. Focusing on a lifelong relationship, its Your:)Ware program allows buyers to trade in their computers after two years and upgrade to state-of-the-art products. Gateway offers online, CD, and instructor-led training, an online software and peripheral store, and its own bundled Internet access. Indeed, Gateway is thinking beyond the box.

For more information on Gateway, visit the Discovering Computers 2002 Companies Web page (**scsite.com/dc2002/companies.htm**) and click Gateway.

clients, can access the contents of the storage area on the servers (Figure 1-25). Instead of clients, some people refer to these attached computers as workstations — giving the term workstation two entirely separate meanings.

In a network, one or more computers usually are designated as the server(s). The major difference between the server and client computers is the server ordinarily has more power and more storage space.

Notebook Computers

A **notebook computer**, also called a **laptop computer**, is a portable, personal computer small enough to fit on your lap. Today's notebook computers are thin, lightweight, and can be as powerful as the average desktop computer. Notebook computers generally are more expensive than desktop computers with equal capabilities.

On a typical notebook computer, the keyboard is located on top of the system unit, the monitor attaches to the system unit with a hinge, and the drives are built into the system unit (Figure 1-26). Weighing on average between 4 and 10 pounds, you easily can transport these computers from place to place. Most notebook computers can run either on batteries or a standard power supply. Users with mobile computing needs, such as business travelers, often have a notebook computer.

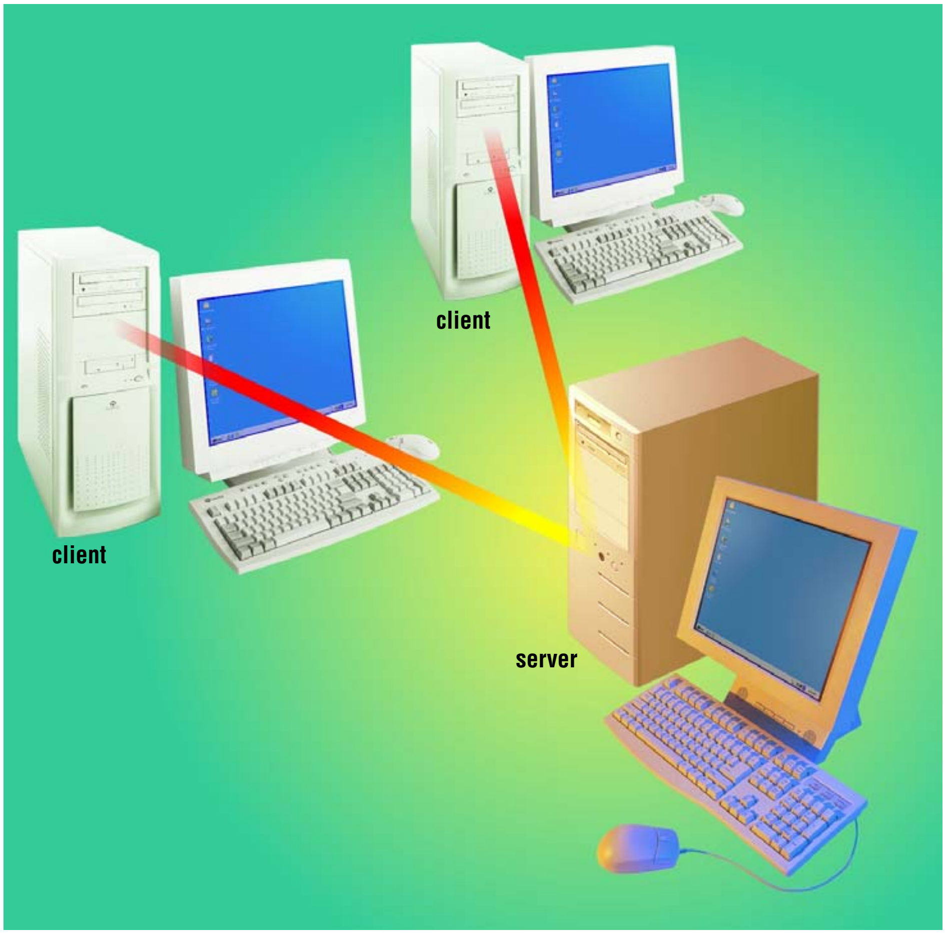


Figure 1-25 A server is a computer that manages resources on a network. Other computers on the network are called clients.

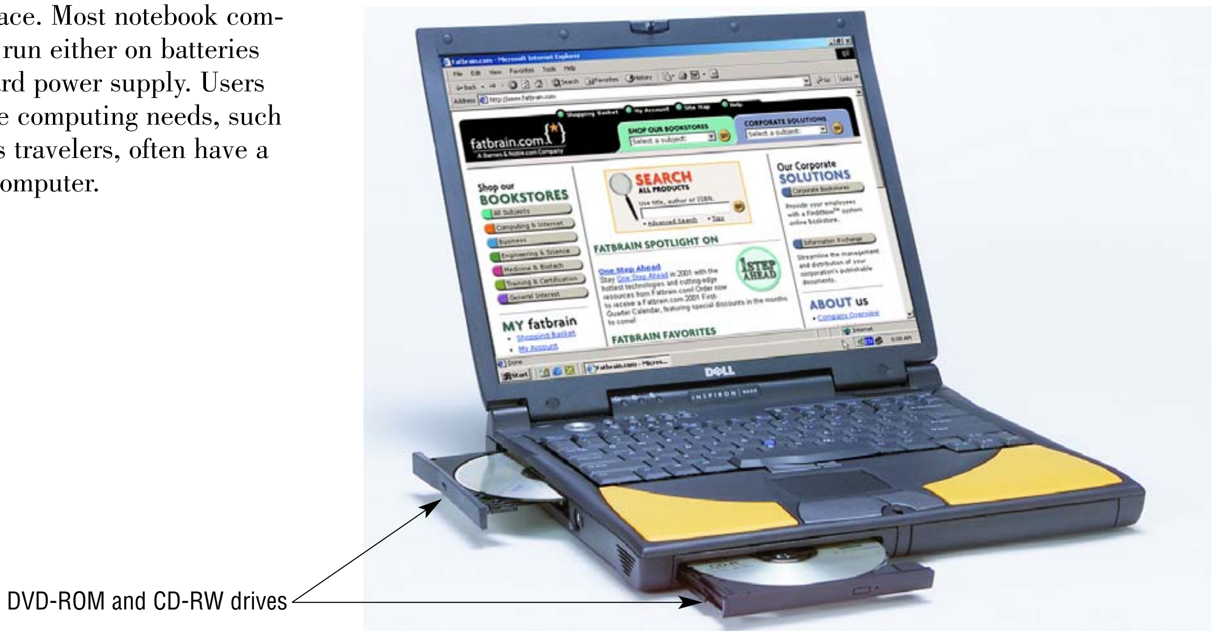


Figure 1-26 On a typical notebook computer, the keyboard is on top of the system unit, the monitor attaches to the system unit with a hinge, and the drives are built-in to the system unit.

HANDHELD COMPUTERS

A **handheld computer**, sometimes called a **palmtop computer**, is a small computer that fits in your hand (Figure 1-27). Because of their reduced size, the screens on handheld computers are quite small. Some have small keyboards. Others have no keyboard at all. Computers in the handheld category usually do not have disk drives. Instead, programs and data are stored on chips inside the system unit or on miniature storage media.

You typically can connect a handheld computer to a larger computer to exchange information between the two computers. A business traveler or other mobile user might use a handheld computer if a notebook computer is too large. Employees whose jobs require them to move from place to place such as parcel delivery people and meter readers also use specific industry-related handheld computers.

Handheld computers often include a stylus for input. A stylus looks like a ballpoint pen, but uses pressure, instead of ink, to write text and draw lines. With the stylus, also called a pen, you write on the screen instead of typing on a keyboard. These computers contain special software that permits the computer to recognize handwritten characters and other symbols. As an alternative to typing or writing, some handheld computers support voice input so you can enter text and instructions by speaking into the computer.

Figure 1-28 shows one of the most popular handheld computers in use today. Sometimes called a **PDA** (**personal digital assistant**), these

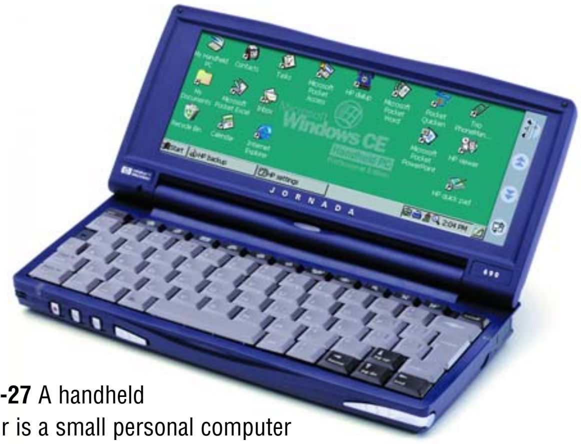


Figure 1-27 A handheld computer is a small personal computer designed to fit in your hand.

Figure 1-28 With some handheld computers, you write directly on the screen with the stylus.

APPLY IT!

Lease or Purchase?

Your computer is old, and you are ready to upgrade. You discover many companies now offer a lease option — somewhat similar to what many automobile companies offer. The question is: When considering the obsolescence factor of a personal computer, does it make sense to lease rather than buy? Consider the following advantages and disadvantages when making your decision.

- Purchase Advantages
  - You own it
  - Tax deductions if used for business-related activities
  - Upgrade options
- Purchase Disadvantages
  - Obsolescence
  - Drains cash
  - Responsible for repairs
  - Interest payments
- Lease Advantages
  - Obsolescence not a factor
  - Conserves cash
  - Increases technological flexibility
- Lease Disadvantages
  - Generally more expensive
  - Will be charged for damage
  - Lease agreement might be confining or have penalty clause

Before making a decision, consider a Lease/Buy Analyzer program. Several of these are free online (see URL below).

For more information on leasing versus purchasing and the Web site mentioned above, visit the Discovering Computers 2002 Apply It Web page (**scsite.com/dc2002/apply.htm**) and click Chapter 1 Apply It #2.

lightweight handheld computers provide personal organizer functions such as a calendar, appointment book, address book, calculator, and notepad. Most of these handheld computers also offer basic software applications such as word processing and spreadsheet. Because of all these added features, many people have replaced their pocket-sized appointment book with these small handheld computers.

Some handheld computers are Web-enabled, allowing you also to access the Internet wirelessly. Other Web-enabled devices include cellular telephones and pagers (Figure 1-29). A **Web-enabled cellular telephone**, sometimes called a **smart phone**, allows you to send and receive messages on the Internet and browse Web sites specifically configured for display on the telephone. A **Web-enabled pager**, also called a **smart pager**, is a two-way radio that allows you to send and receive messages on the Internet.

INTERNET APPLIANCES

A **Internet appliance**, also called an **information appliance**, is a computer with limited fuctionality whose main purpose is to connect to the Internet from home. Internet appliances are available in a variety of styles, sizes, colors, and sleek designs.

Some Internet appliances look much like a desktop computer (Figure 1-30). Manufacturers typically pre-install all software on these Internet appliances, making it very easy for the novice user to work on the

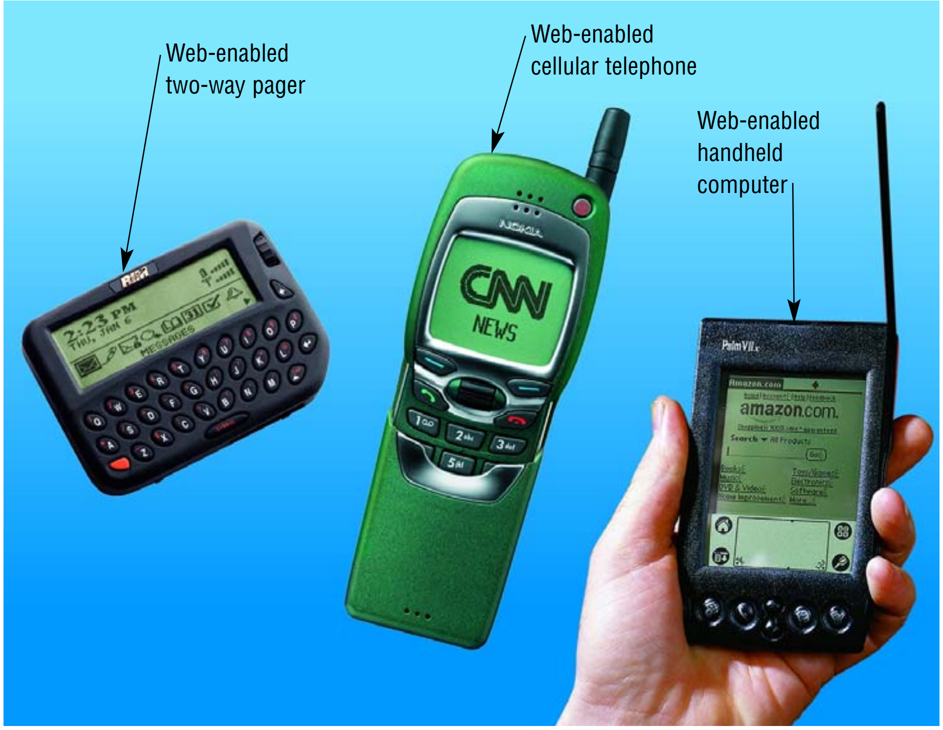

Web-enabled two-way pager
Web-enabled cellular telephone
Web-enabled handheld computer

Figure 1-29 These handheld computers and devices are small enough to fit in the palm of your hand.

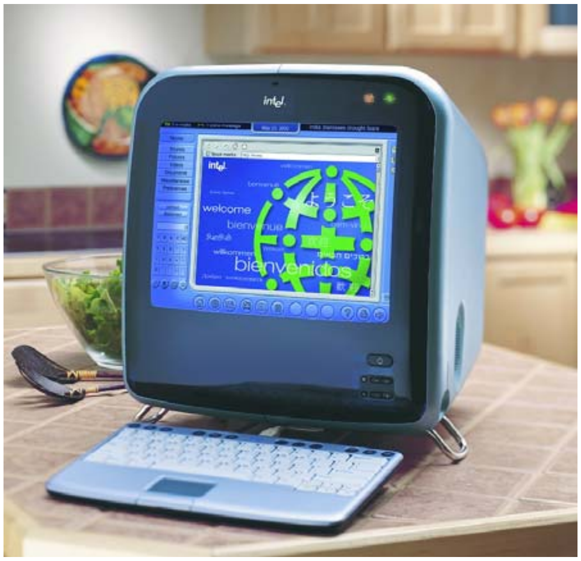


Figure 1-30 This Internet appliance is equipped with all the software you need to access the Internet easily from any room in the house.

Web Link

For more information on handheld computers, visit the Discovering Computers 2002 Chapter 1 WEB LINK page (**scsite.com/dc2002/ch1/weblink.htm**) and click Handheld Computers.

Internet. Another popular Internet appliance is a set-top box. A set-top box, such as WebTV™, sits on top of or next to a television set and allows you to access the Internet and navigate Web pages using a device that resembles a remote control (Figure 1-31).

MID-RANGE SERVERS

A **mid-range server** is more powerful and larger than a workstation computer (Figure 1-32). Mid-range servers often can support up to 4,000 connected users at the same time. In the past, these types of computers were known as **minicomputers**.

Users typically access a mid-range server via a personal computer or a terminal. A **terminal** is a device with a monitor and keyboard. Terminals, sometimes called **dumb terminals** because they have no processing power, cannot act as stand-alone computers and must be connected to a server to operate.

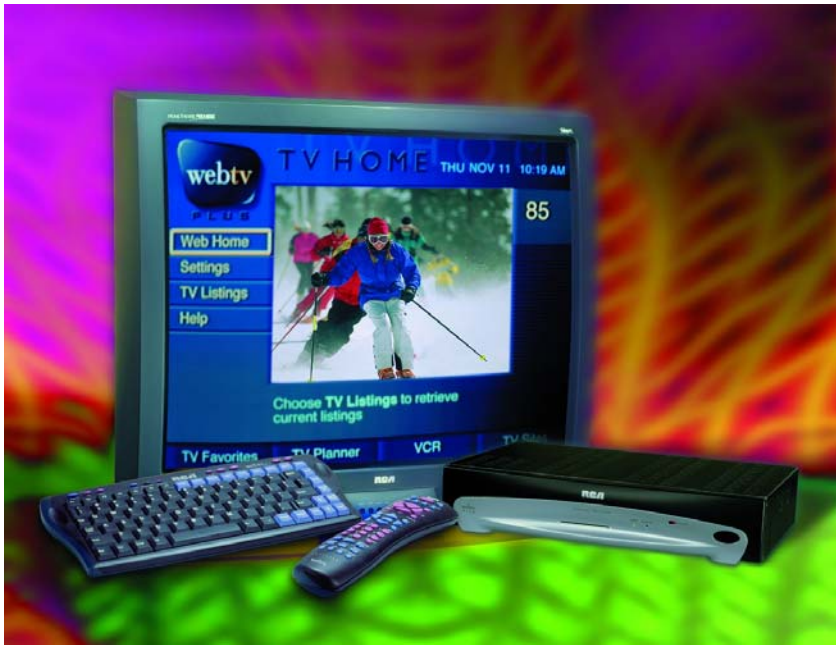


Figure 1-31 With a device such as WebTV™, you can access the Internet from the comfort of your family room or any room that has television access.

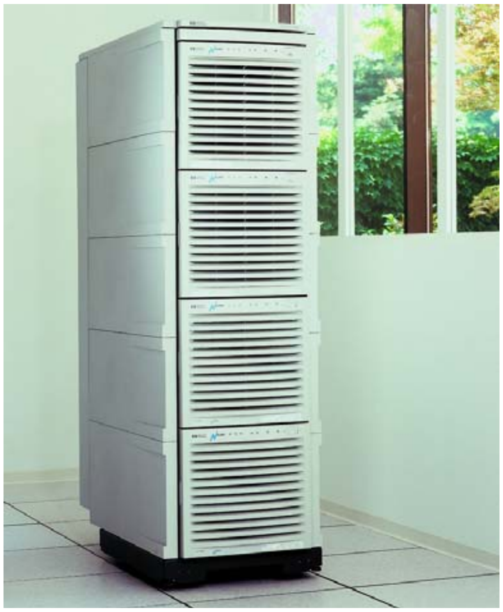


Figure 1-32 A mid-range server is more powerful than a workstation, but less powerful than a mainframe.

ISSUE

A Double-Edged Sword?

Handheld Devices

Many technological innovations are double-edged swords, with both positive and negative effects on society. Some sources say that extended use of Web-enabled cellular telephones, for instance, could lead to health problems. Storing obsolete equipment in basements and landfills is not healthy for you or the environment. Research from some health institutions indicates that people who have cardiac pacemakers could be affected by radio signals. Drivers using handheld devices are more likely to be involved in a crash. Media reports that mobile telephones have caused explosions at gasoline stations. Is the overall impact of computers and technology positive or negative for society? Do you agree adverse health effects could be related to the signals produced by the mobile devices? Should there be a law against driving and using a handheld device? What are some other negative issues related to technology?

For more information on computer effects on society, visit the Discovering Computers 2002 Issues Web page (**scsite.com/dc2002/issues.htm**) and click Chapter 1 Issue #4.

MAINFRAMES

A **mainframe** is a large, expensive, very powerful computer that can handle hundreds or thousands of connected users simultaneously (Figure 1-33). Mainframes also can act as a server in a network environment.

Mainframes can store tremendous amounts of data, instructions, and information. Users often access the mainframe with terminals or personal computers.

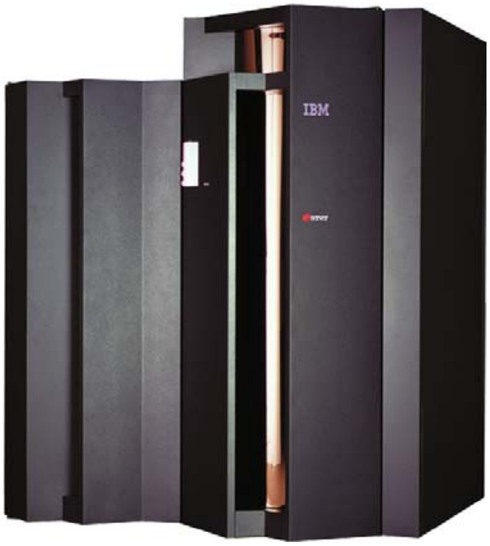


Figure 1-33 Mainframe computers are large, expensive, powerful machines that can handle thousands of connected users simultaneously and process up to millions of instructions per second.

COMPANY ON THE CUTTING EDGE

Big Blue PC

Checkmate. That is the word World Chess Champion Garry Kasparov heard when IBM's Deep Blue supercomputer defeated him in 1997. This six-game match marked the first time a computer had beaten a reigning world-renown chess player. But rather than emphasize the victory, IBM executives used the opportunity to focus on technology's potential.

Indeed, IBM has altered our lives since its incorporation in 1911. IBM's long record of computer successes include financial support for the Mark I in 1944, which took about 12 seconds to perform a division operation; the System/360 in 1964, which was the first family of computers with interchangeable software and peripherals; the IBM PC in 1981, with a base price of $1,565 and 16 KB of memory, a floppy disk drive, and an optional color monitor; and the ThinkPad notebook computer in 1992. For the past 40 years, IBM has been noted for its mainframe computers.

Today, IBM is the world's largest information technology company and has received numerous honors for its corporate policies, including being named by *WE Magazine* as the Top Employer of the Year for People with Disabilities and by the *Financial Times* as one of the World's Most Respected Companies.

For more information on IBM, visit the Discovering Computers 2002 Companies Web page (**scsite.com/dc2002/companies.htm**) and click IBM.

SUPERCOMPUTERS

A **supercomputer** is the fastest, most powerful computer — and the most expensive (Figure 1-34). Supercomputers are capable of processing more than 12 trillion instructions in a single second. Applications requiring complex, sophisticated mathematical calculations use supercomputers. For example, weather forecasting, nuclear energy research, and petroleum exploration applications use a supercomputer.

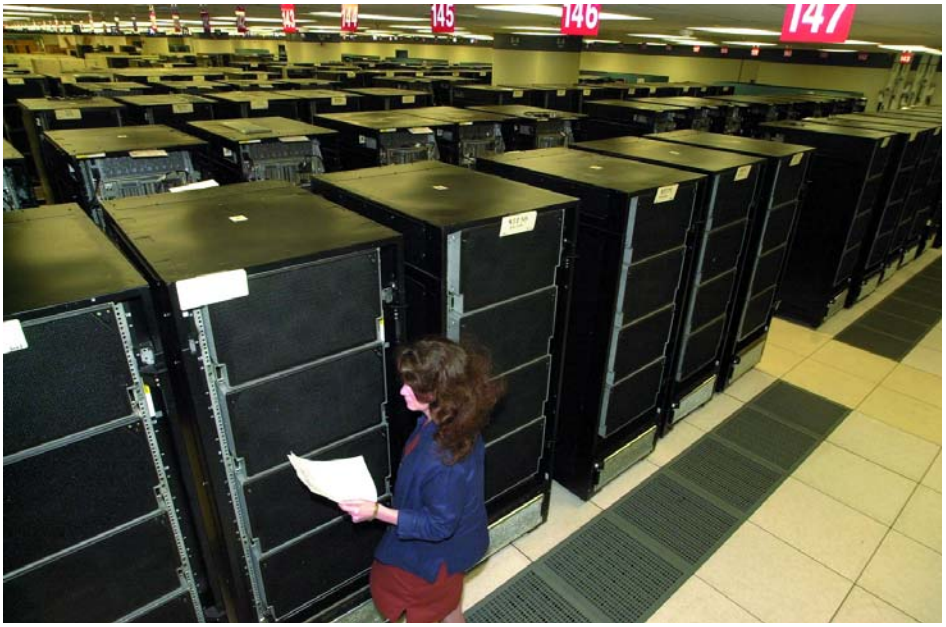


Figure 1-34 This IBM supercomputer, which covers an area the size of two basketball courts, can process up to 12 trillion calculations per second.

ELEMENTS OF AN INFORMATION SYSTEM

Obtaining useful and timely information from a computer requires more than just the hardware and software discussed thus far. Other elements include the input of accurate data, trained information technology (IT) personnel, knowledgeable users, and documented procedures. Together, these elements (hardware, software, data, people, and procedures) comprise an **information system** (Figure 1-35).

For an information system to provide accurate, timely, and useful information, each element in the system must be present and all of the elements must work together. The hardware must be reliable and capable of handling the expected workload. The software must be developed carefully and tested thoroughly. The data entered must be accurate. If the data is incorrect, the information it generates also will be incorrect.

Properly trained IT personnel are required to run most mid-size and large computers. Even small networks of personal computers usually have a system administrator to manage the network. Users are taking increasing responsibility for the successful operation of information systems. This includes responsibility for the accuracy of both the input and output. In addition, users are taking a more active role in the development of computer applications. They work closely with IT personnel in the development of computer applications that relate to their areas of work. Finally, all the IT applications should have documented procedures covering not only the computer operations but any other related procedures as well.

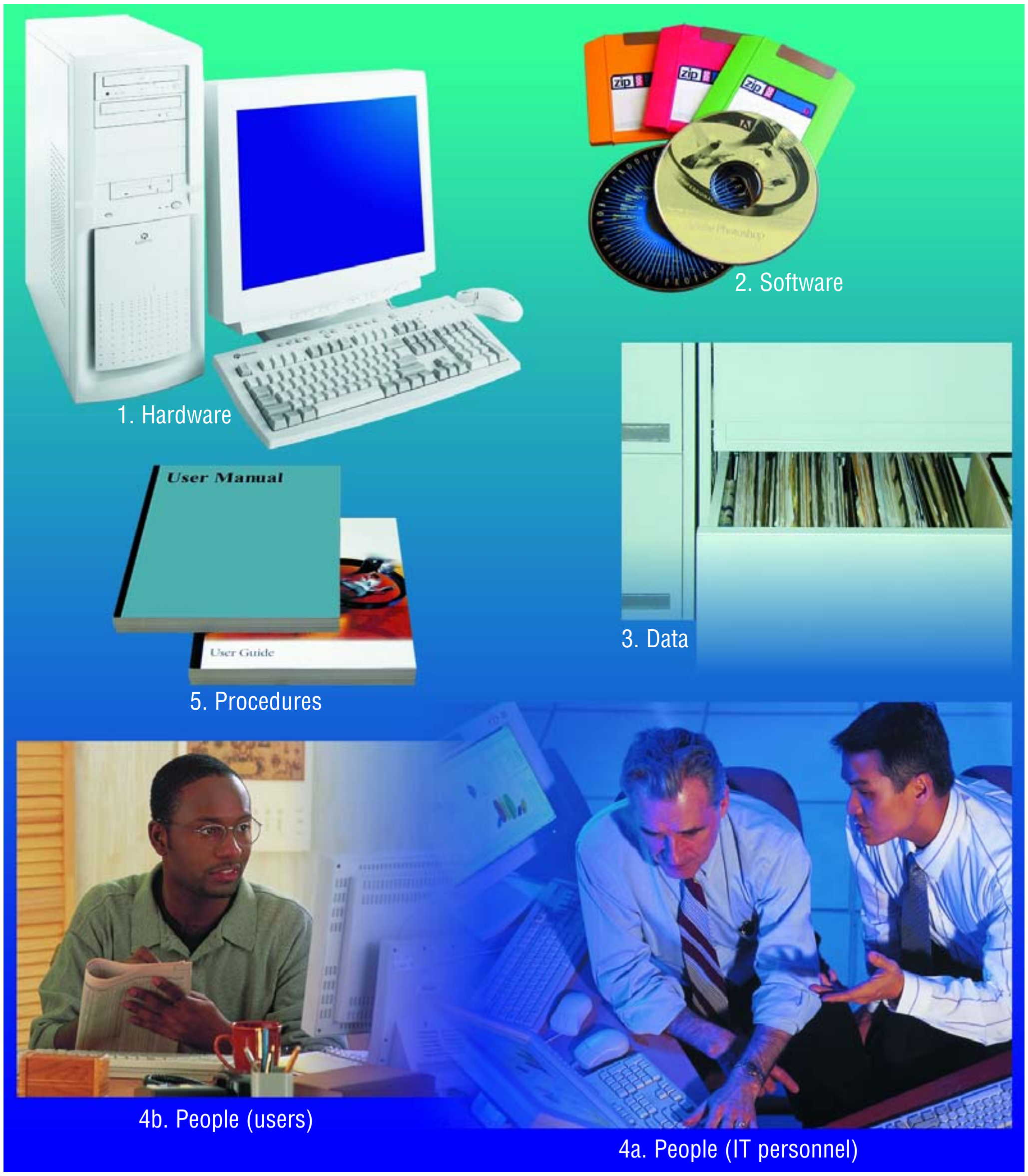


Figure 1-35 Five elements combine to make an information system: (1) hardware, (2) software, (3) data, (4) people, and (5) procedures.

Web Link

For more information on women in technology, visit the Discovering Computers 2002 Chapter 1 WEB LINK page (**scsite.com/dc2002/ch1/weblink.htm**) and click Women in Technology.

Web Link

For more information on minorities in technology, visit the Discovering Computers 2002 Chapter 1 WEB LINK page (**scsite.com/dc2002/ch1/weblink.htm**) and click Minorities in Technology.

EXAMPLES OF COMPUTER USAGE

Every day, numerous users rely on different types of computers for a variety of applications. Whether running complex application software, connecting to a network, or performing countless other functions, computers are powerful tools at home, at work, and at school.

To illustrate the variety of uses for computers, this section takes you on a visual and narrative tour of five categories of users: a home user, a small office/home office (SOHO) user, a mobile user, a large business user, and a power user (Figure 1-36). The following pages present examples of hardware and software listed in the table.

USER	HARDWARE/NETWORK	SOFTWARE
Home	• Desktop computer • Handheld computer • Web-enabled devices • Internet	• Reference (e.g., encyclopedias, medical dictionaries, road atlas) • Entertainment (e.g., games, music composition, greeting cards) • Educational (e.g., foreign language tutorials, children's math and reading software) • Computer-based training • Productivity (word processing, spreadsheet) • Personal finance, online banking • Communications and Web browser • E-mail and instant messaging
Small Office/Home Office	• Desktop computer • Handheld computer • Shared network printer • Local area network • Internet	• Productivity software (word processing, spreadsheet, database) • Company specific (e.g., accounting, legal reference) • Communications and Web browser • May use network versions of some software packages • E-mail
Mobile	• Notebook computer equipped with a modem • Video projector • Web-enabled handheld computer • Internet • Local area network	• Productivity (word processing, spreadsheet, presentation graphics) • Personal information management • Communications and Web browser • E-mail
Large Business	• Mid-range server or mainframe • Desktop or notebook computer • Handheld computer • Kiosk • Local area network or wide area network, depending on the size of the company • Internet	• Productivity (e.g., word processing, spreadsheet, database, presentation graphics) • Personal information management • Desktop publishing • Accounting • Network management software • Communications and Web browser • May use network versions of some software packages • E-mail
Power	• Workstation or other powerful computer with multimedia capabilitities • Local area network • Internet	• Desktop publishing • Multimedia authoring • Photo, sound, and video editing • Communications and Web browser • Computer-aided design • E-mail

Figure 1-36 Today, computers are used in millions of businesses and homes to support work tasks and leisure activities. Depending on their intended usage, different computer users require different kinds of hardware and software to meet their needs effectively. The types of users are listed here together with the hardware, software, and network types mostly commonly used by each.

Home User

In a growing number of homes, the computer no longer is a convenience. Instead, it has become a basic necessity. Each family member uses the computer for different purposes. A **home user** spends time on the computer for research and education, budgeting and personal financial management, home business management, entertainment, personal and business communications, and Web access (Figure 1-37).

Once online, users can retrieve a tremendous amount of information, take college classes, pay bills, buy and sell stocks, shop, download music or movies, read a book, file taxes, book a flight, and communicate with others around the world. Some home users access the Web through the desktop computer, while others use Internet appliances and Web-enabled handheld computers and devices.

Home users also have a variety of other software. Most computers today are sold with word processing software already installed. Personal finance software helps to prepare taxes, balance a checkbook, and manage investments and family budgets. This software also allows you to connect to your bank via the Internet to pay bills online. Other software assists in organizing names and addresses, setting up home and automobile maintenance schedules, and preparing legal documents.

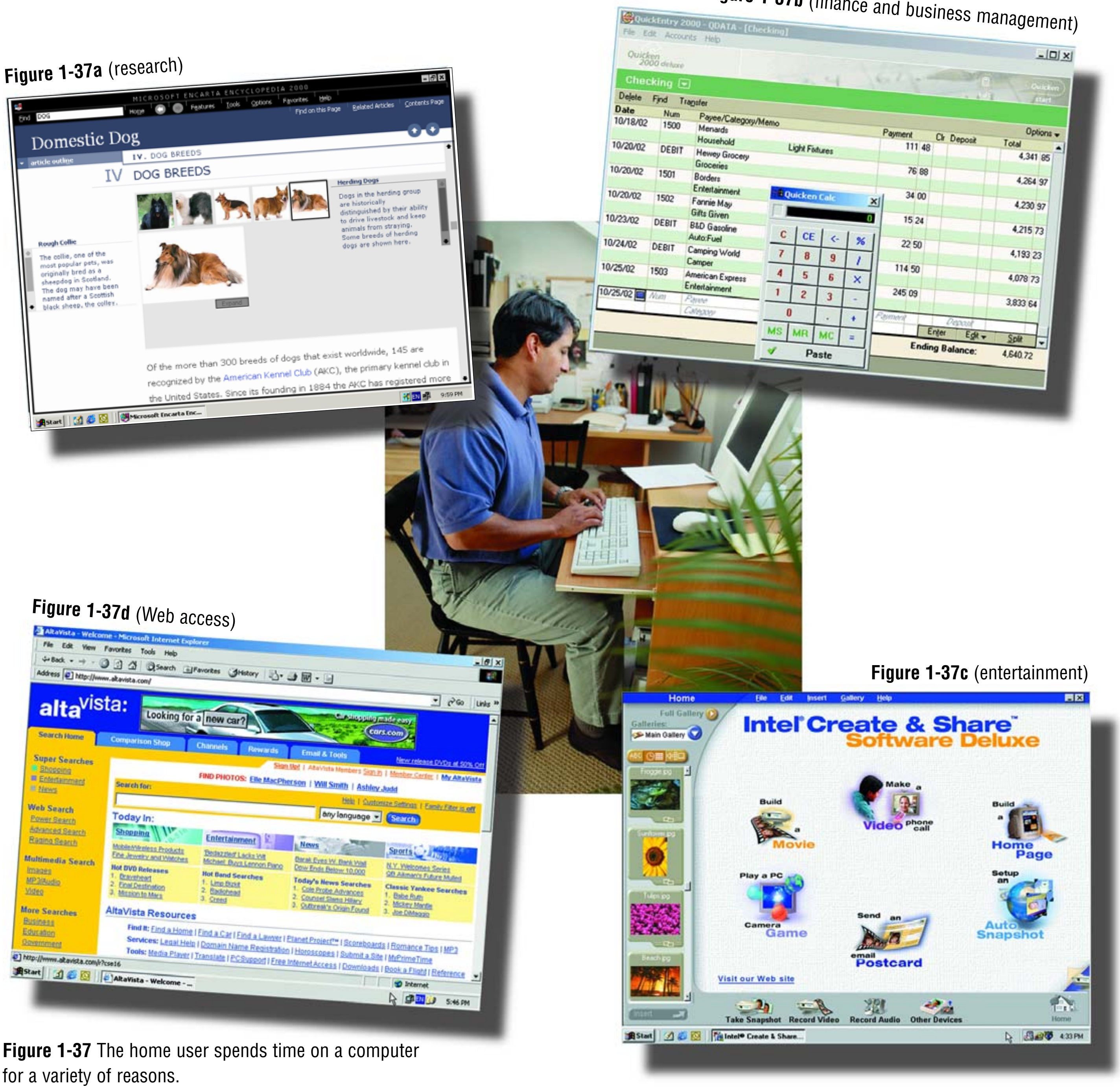


Figure 1-37a (research)

Domestic Dog

IV. DOG BREEDS

IV DOG BREEDS

Herding Dogs

Dogs in the herding group are historically distinguished by their ability to drive livestock and keep animals from straying. Some breeds of herding dogs are shown here.

Rough Collie

The collie, one of the most popular pets, was originally bred as a sheepdog in Scotland. The dog may have been named after a Scottish black sheep, the colley.

Of the more than 300 breeds of dogs that exist worldwide, 145 are recognized by the American Kennel Club (AKC), the primary kennel club in the United States. Since its founding in 1884 the AKC has registered more

Figure 1-37b (finance and business management)

Date	Num	Payee/Category/Memo		Payment	Clr	Deposit	Total
10/18/02	1500	Menards Household	Light Fixtures	111 48			4,341 85
10/20/02	DEBIT	Hewey Grocery Groceries		76 88			4,264 97
10/20/02	1501	Borders Entertainment		34 00			4,230 97
10/20/02	1502	Fannie May Gifts Given		15 24			4,215 73
10/23/02	DEBIT	B&D Gasoline Auto:Fuel		22 50			4,193 23
10/24/02	DEBIT	Camping World Camper		114 50			4,078 73
10/25/02	1503	American Express Entertainment		245 09			3,833 64
10/25/02	Num	Payee Category		Payment		Deposit	

Ending Balance: 4,640.72

Figure 1-37d (Web access)

Figure 1-37c (entertainment)

Figure 1-37 The home user spends time on a computer for a variety of reasons.

Reference software, such as encyclopedias, medical dictionaries, or a road atlas, provides valuable and thorough information for everyone in the family. Software also provides hours of entertainment. For example, you can play games such as solitaire, chess, and Monopoly™; compose music; make a family tree; or create a greeting card. Educational software helps adults learn to speak a foreign language and youngsters to read, write, count, and spell. To make computers easier for younger people to use, many companies design special hardware just for children (Figure 1-38).

ISSUE

Does Technology Discriminate?

Computer Usage

In California, the Technology Training Foundation of America (TTFA) (see URL below) is trying to help bridge the digital divide by providing all California public and private schools and non-profit organizations access to donated computer equipment. A study completed by the Gartner Group suggests, however, the introduction of computer technology and the Internet into the schools has served to widen the gap in educational opportunity. Michael Fleisher, Gartner chief executive, says the study indicates an experience gap exists, and an entire socioeconomic group is now one generation behind in terms of that experience. The findings of the report further imply that even if this socioeconomic group has access to computers and to the Internet at school and public libraries, they cannot catch up to their experienced counterparts. Do you agree with these findings? Does a digital divide exist? Will the gap continue to widen? What measures can be taken to eliminate the digital divide?

For more information on technology discrimination, the digital divide, and the Web site mentioned above, visit the Discovering Computers 2002 Issues Web page (**scsite.com/dc2002/issues.htm**) and click Chapter 1 Issue #5.

Many home users also have handheld computers to maintain daily schedules and address lists. Other special-purpose handheld computers manage and monitor the health condition of a family member.

A major concern of the United States government and many citizens around the world is the digital divide.

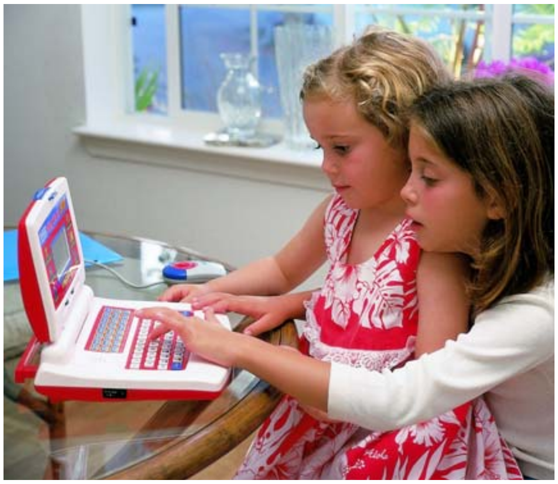


Figure 1-38 Many manufacturers design hardware especially for younger children.

The **digital divide** is the idea that you can separate people of the world into two distinct groups: (1) those who have access to technology with the ability to use it and (2) those who do not have access to technology or are without the ability to use it. The concern is that some of the less fortunate people in the world are not able to take advantage of the very technology that makes much of our society prosper and grow.

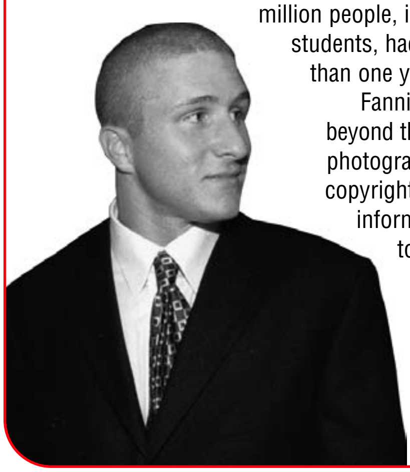
To narrow the gap in the digital divide, the United States government and many organizations have efforts in progress to improve the way society interacts with computers. These efforts include establishing community training centers and supplying teachers and students with necessary technology.

TECHNOLOGY TRAILBLAZER

SHAWN **FANNING**

Frustrated about not being able to download good songs, Shawn Fanning decided to take matters in his own hands. Why not allow music lovers to swap individual songs from each other? Starting in January 1999, he spent sleepless nights feverishly writing the source code on his Dell notebook computer, fearful that someone would steal his idea before he could complete the program.

One semester earlier, Fanning had been a 19-year-old freshman computer science major at Boston's Northeastern University. But he dropped out to devote his full energy toward developing the Napster software and company, named after his nappy hair. The program he wrote was an instant success, even before it was complete. More than 32 million people, including an estimated 73 percent of all U.S. students, had downloaded the software and songs in less than one year.



Fanning's pioneering file-sharing concept has extended beyond the music industry. Media moguls in the print media, photography, and movie industries are battling to keep their copyrighted digital information under their control, while information-age zealots claim that information is meant to be exchanged freely.

For more information on Shawn Fanning, visit the Discovering Computers 2002 People Web page (**scsite.com/dc2002/people.htm**) and click Shawn Fanning.

Small Office/Home Office User

Computers also play an important role in helping small business users manage their resources effectively. A **small office/home office** (**SOHO**) includes any company with fewer than 50 employees, as well as the self-employed people that work out of their home. Small offices include local law practices, accounting firms, travel agencies, and florists. SOHO users typically have a desktop personal computer to perform some or all of their duties (Figure 1-39). Many also have handheld computers to manage appointments and contact information.

SOHO users access the Web to look up information on addresses, postal codes, flights, package shipping, and rates. Nearly all SOHO users communicate with others through e-mail. Many are entering the **e-commerce** arena by conducting their financial business on the Web. These SOHO users have their own Web sites to advertise their products and services and take orders and requests from customers. Some of these Web sites use a **Web cam**, which is a video camera with output that can be displayed on a Web page. A Web cam allows the SOHO user to show the world a live view of some aspect of their business.

Small offices often have a local area network to connect the computers in the company. Networking the computers saves money on both hardware and software. For example, the small office avoids the expense of buying multiple printers by connecting a single shared printer to the network. The company also can purchase a network version of a software package. A network version usually costs less than purchasing a separate software package for each individual desktop computer. Employees then access the software on a server as needed.

For business document preparation, finances, and tracking, SOHO users often purchase basic productivity software such as word processing and spreadsheet software. They also may use other types of software, specific to their industry or company. An accounting firm, for example, will have accounting software to prepare journals, ledgers, income statements, balance sheets, and other accounting documents.

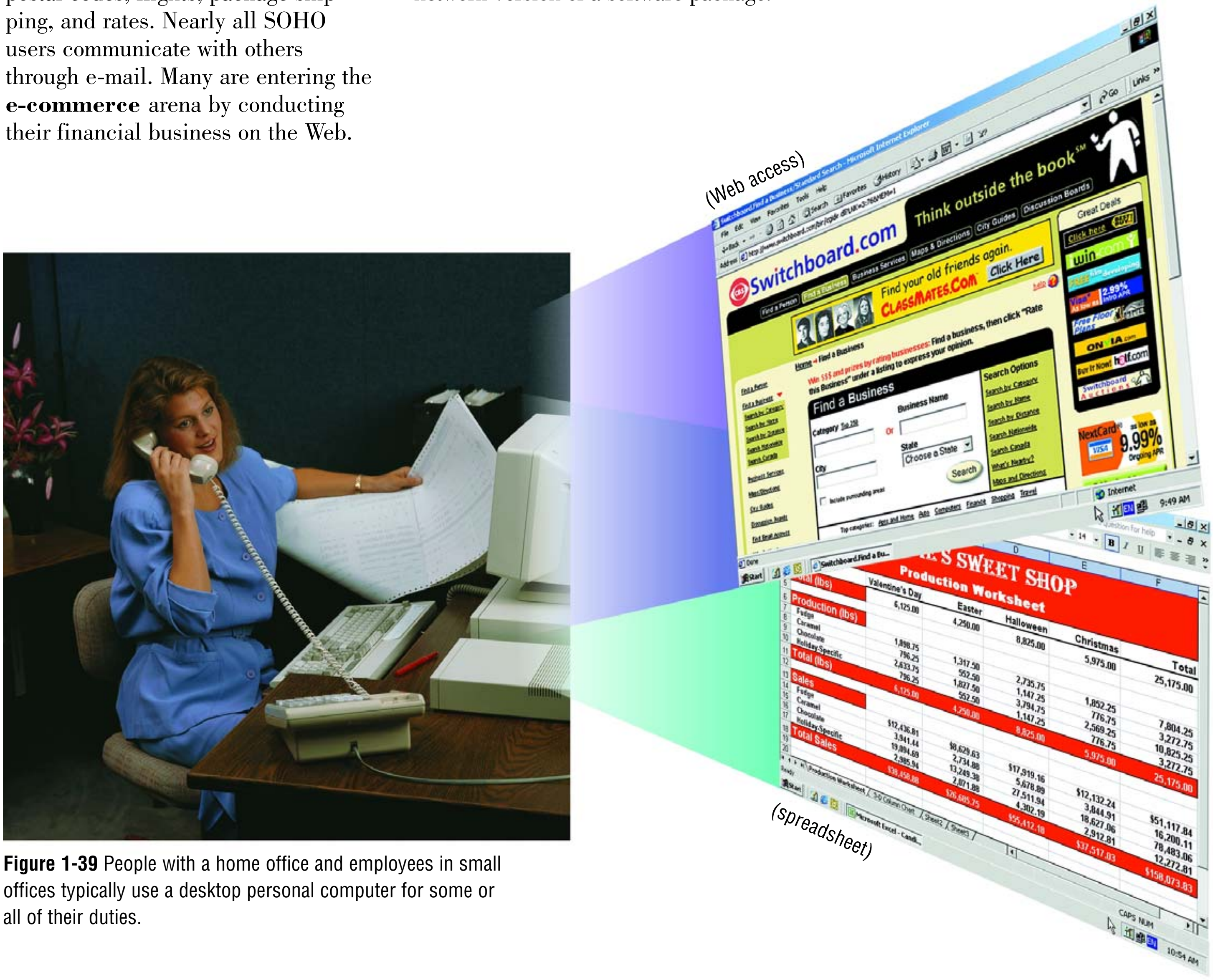


Figure 1-39 People with a home office and employees in small offices typically use a desktop personal computer for some or all of their duties.

Mobile User

As businesses expand to serve customers across the country and around the world, more and more employees have become **mobile users**, traveling to and from a main office to conduct business (Figure 1-40). Mobile users include a range of people such as sales representatives, marketing managers, real estate agents, insurance agents, meter readers, package delivery people, journalists, consultants, and students.

Mobile users often have a notebook computer equipped with a modem, which enables them to transfer information between their computer and another computer such as one at the main office. Sometimes they connect wirelessly to the Internet using a Web-enabled handheld computer or device such as a cellular telephone.

Other software utilized by mobile users includes basic productivity software such as word processing and spreadsheet software. They also use presentation graphics software to create and deliver presentations. To deliver the presentation to a large audience, the mobile user connects a notebook computer to a video projector that displays the presentation on a full screen.

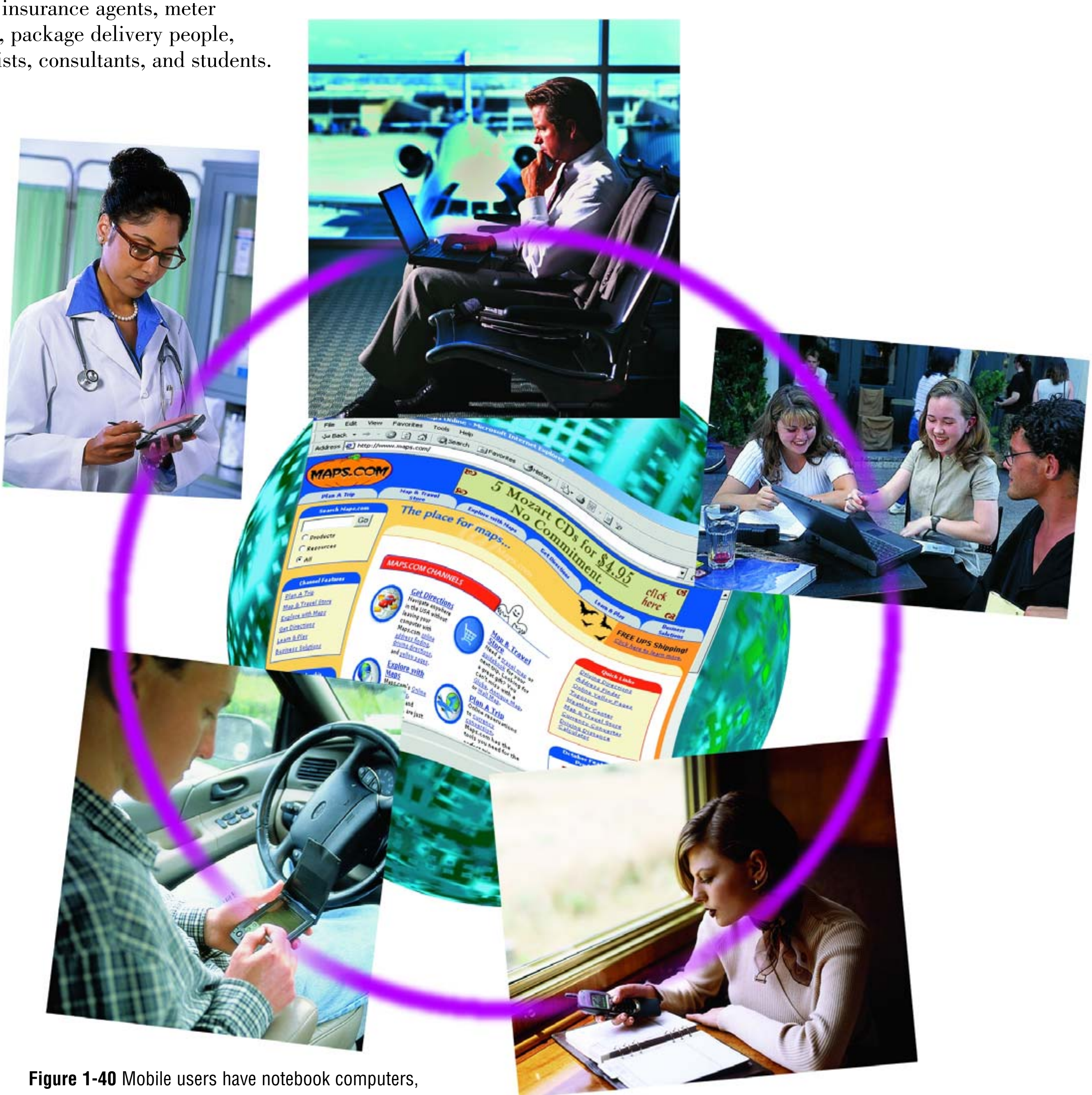


Figure 1-40 Mobile users have notebook computers, handheld computers, and Web-enabled cellular telephones, so they can work while on the road.

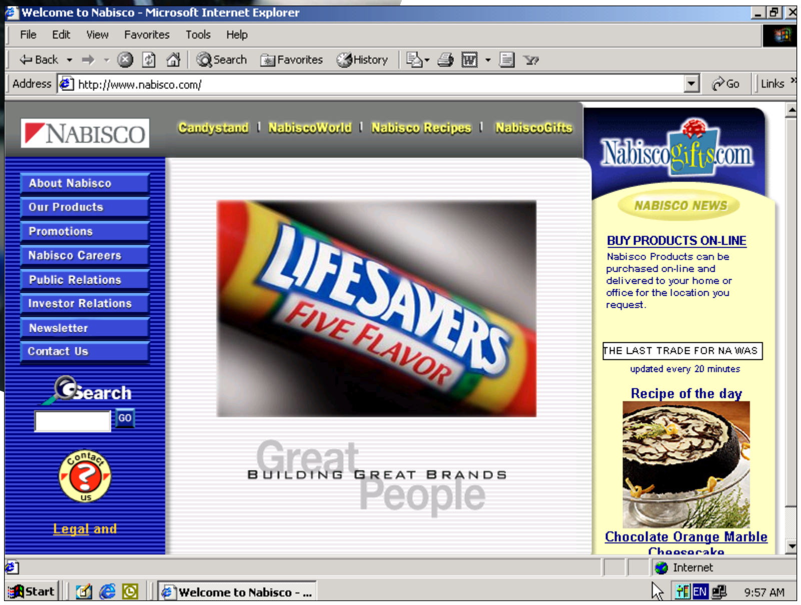
Large Business User

A large business can have hundreds or thousands of employees in offices across a region, the country, or the world. The company usually has an equally large number of users (the **large business user**) and computers connected in a network (Figure 1-41). This network — a local area network or a wide area network depending on the size of the company — enables communications among employees at all locations.

Almost all large businesses today have their own Web sites to showcase products, services, and selected company information (Figure 1-42). Customers, vendors, and any other interested parties can access the information on the Web without having to speak to a company employee. Many large businesses also participate in e-commerce, allowing customers to conduct financial business through the Web site.

Throughout a large business, computers help employees perform a variety of job-related tasks. For example, users in a typical large company use an automated telephone system to route calls to the appropriate department or person. The inside sales representatives enter orders into desktop personal computers while on the telephone with a customer.

Figure 1-41 A large business can have hundreds or thousands of users in offices across a region, the country, or the world. Throughout the business, computers help employees perform a variety of job-related tasks.



BUY PRODUCTS ON-LINE
Nabisco Products can be purchased on-line and delivered to your home or office for the location you request.

THE LAST TRADE FOR NA WAS
updated every 20 minutes

Recipe of the day
Chocolate Orange Marble Cheesecake

Figure 1-42 Large businesses usually have their own Web site to showcase products, services, and company information. Many allow customers to transact business on the Web, as well.

Outside sales representatives — the mobile users in the firm — use notebook computers to conduct business while on the road. The marketing department uses desktop publishing software to prepare marketing literature such as newsletters, product brochures, and advertising material. The accounting department uses software to pay invoices, bill customers, and process payroll. The employees in the information systems department have a huge responsibility: to keep the computers and the network running and determine when and if it requires new hardware or software.

In addition to word processing, spreadsheet, database, and presentation graphics software, employees in a large firm also may use calendar programs to post their schedules on the network and handheld computers to maintain personal or company information. Electronic mail and Web browsers enable communications among employees and others around the world.

Some large businesses also use a kiosk to provide information to the public. A **kiosk** is a freestanding computer, usually with a touch screen that serves as an input device (Figure 1-43). More advanced kiosks allow customers to place orders, make payments, and access the Web.

Many employees of a large business often telecommute (Figure 1-44). **Telecommuting** is a work arrangement in which employees work away from a company's standard workplace, and often communicate with the office using some communications technology.

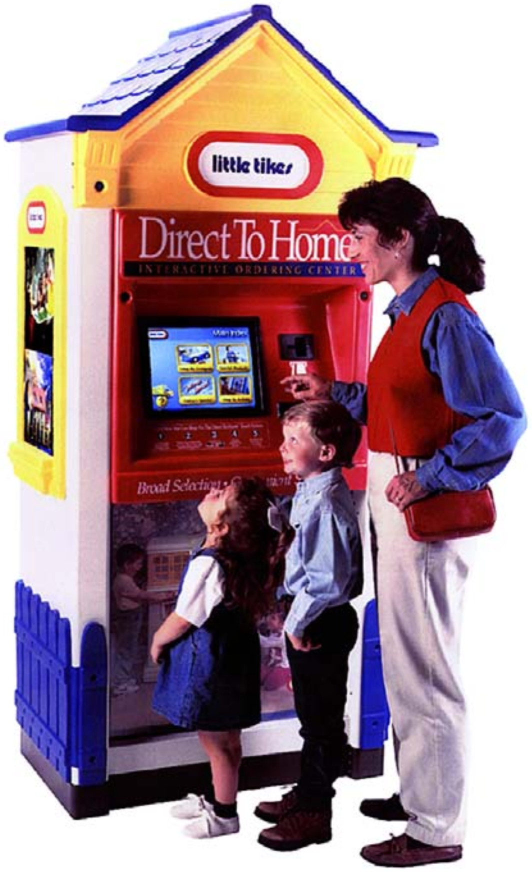


Figure 1-43 A kiosk is a freestanding computer, usually with multimedia capabilities and a touch screen.

Figure 1-44 Many employees of large businesses often telecommute, and communicate with the office using some form of communications technology.

Power User

Another category of user, called a **power user**, requires the capabilities of a workstation or other powerful computer. Examples of power users include engineers, architects, desktop publishers, and graphic artists (Figure 1-45). Power users typically work with **multimedia**, in which they combine text, graphics, sound, video, and other media elements into one application. All of these users need computers with extremely fast processors that have multimedia capabilities because of the nature of their work.

In addition to powerful hardware, a workstation contains software specific to the needs of the power user. For example, engineers and architects use software to draft and design items such as floor plans, mechanical assemblies, and computer chips. The desktop publisher uses specialized software to prepare marketing literature such as newsletters, brochures, and annual reports. This software usually is quite expensive because of its specialized design.

Power users are found in all types of businesses, both large and small. Some also work at home. Depending on where they work, power users might fit into one of the previously discussed categories, as well. Thus, in addition to their specific needs, these users often have additional hardware and software requirements such as network capabilities and Internet access.

Figure 1-45 Examples of power users are engineers, architects, desktop publishers, graphic artists, and multimedia authors.

COMPUTER USER AS A WEB PUBLISHER

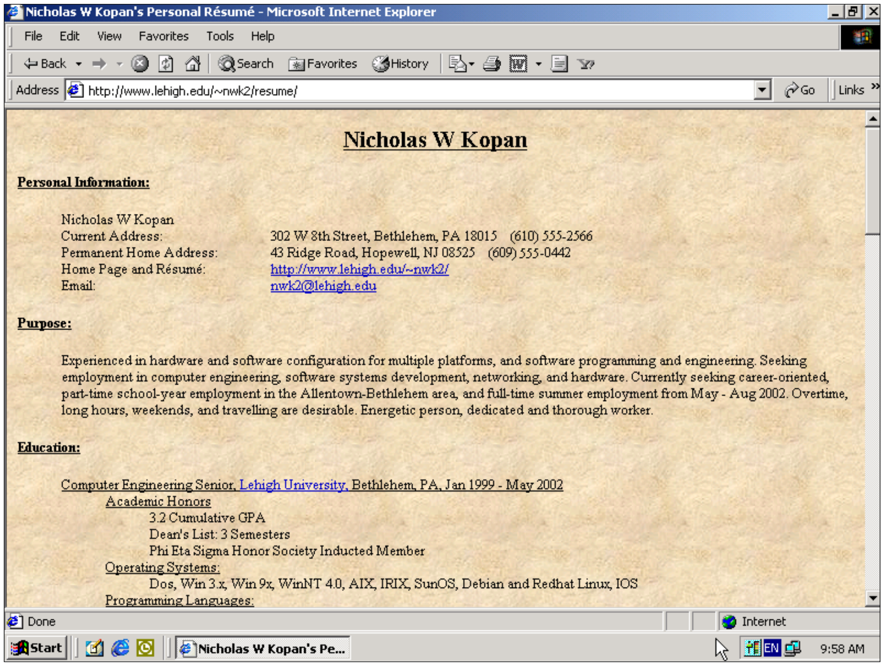
Individuals in each of the five categories of users (home, SOHO, mobile, large business, and power) access the Internet for a wealth of information and to shop for goods and services. In addition to being a recipient of information, however, users have the ability to *provide* information to other connected users around the world. Embracing this growing service of the Internet, users now can be active participants that provide personal and business information, photographs, items for sale, and even live conversation.

To accomplish this, many users create Web pages with word processing software or with Web page authoring software. Once you have created a Web page, you publish it. **Publishing** a Web page is the process of making it available on the Internet. Many Internet service providers (ISPs) and online service providers (OSPs) will store personal Web pages for their subscribers and members at no cost. Through your application software, you can copy Web pages from your computer to the ISPs or OSPs to make your Web pages available to the world.

Users publish Web pages for a variety of reasons:

- Home users publish Web pages that provide information about their family
- Small business users publish Web pages that provide information about their business
- Job seekers often publish Web pages that resemble a resume (Figure 1-46)
- Educators publish online courses, called distance-learning courses

Home and small business users also display photographs, videos, artwork, and other images on personal Web pages or as advertisements on other's Web pages. To display photographs, you use a scanner, a digital camera, or a PC camera. To create and modify graphical images, many easy-to-use paint/image editing programs exist. Some of these programs even include photo-editing capabilities so you can touch-up digital photographs such as removing red-eye. Some Web sites are called **photo communities** because they allow you to create an online photo album, and they store your digital photographs free of charge.



Nicholas W Kopan

Personal Information:

Nicholas W Kopan
Current Address: 302 W 8th Street, Bethlehem, PA 18015 (610) 555-2566
Permanent Home Address: 43 Ridge Road, Hopewell, NJ 08525 (609) 555-0442
Home Page and Résumé: http://www.lehigh.edu/~nwk2/
Email: nwk2@lehigh.edu

Purpose:

Experienced in hardware and software configuration for multiple platforms, and software programming and engineering. Seeking employment in computer engineering, software systems development, networking, and hardware. Currently seeking career-oriented, part-time school-year employment in the Allentown-Bethlehem area, and full-time summer employment from May - Aug 2002. Overtime, long hours, weekends, and travelling are desirable. Energetic person, dedicated and thorough worker.

Education:

Computer Engineering Senior, Lehigh University, Bethlehem, PA, Jan 1999 - May 2002
  Academic Honors
    3.2 Cumulative GPA
    Dean's List: 3 Semesters
    Phi Eta Sigma Honor Society Inducted Member
  Operating Systems:
    Dos, Win 3.x, Win 9x, WinNT 4.0, AIX, IRIX, SunOS, Debian and Redhat Linux, IOS
  Programming Languages:

Figure 1-46 Job seekers often publish Web pages, so potential employers easily can locate their resume on the Web.

APPLY IT!

Share Your Photos Online

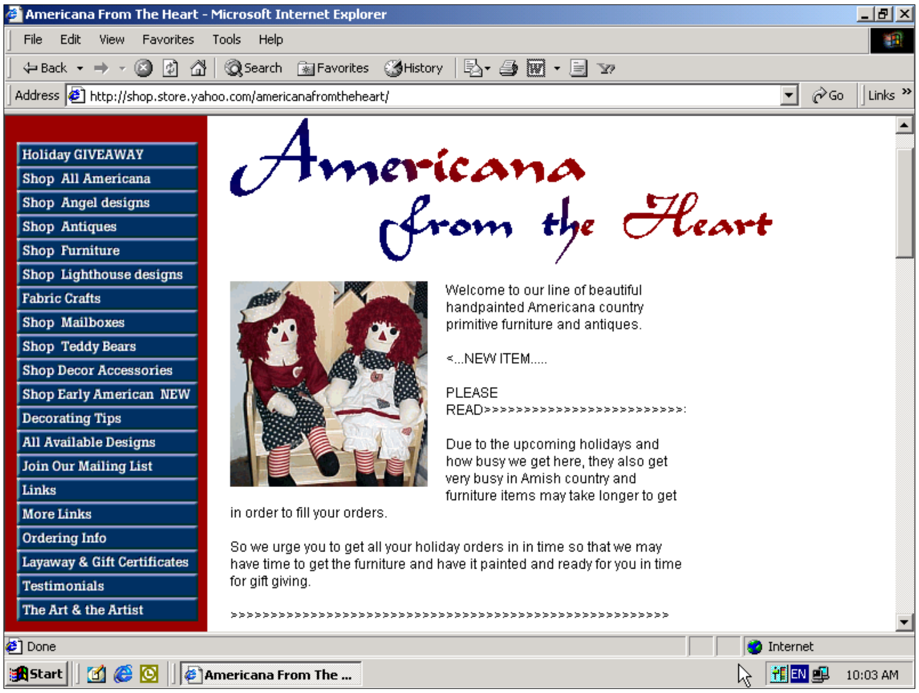
Digital cameras have opened a new world of photo sharing online. Photo communities are all the rage. At these photo sharing Web sites, you store and share pictures. You can elect to share your Web site with the world, protect it with a password, or keep the site private. Many of the Web sites offer a variety of other services, including advice on how to take better pictures, tools, products, and more. Some let you share other items too, including calendars and stories.

WebShots (see URL below) is one of the many popular photo communities. To join WebShot and other free photo communities, you first must complete a registration process. Most of these sites require you provide your name and e-mail address, and that you select a user name and password. Some communities, such as WebShot, require you to download a software program, which includes an automatic Web connection that downloads new photos each day from a category of your choice. PhotoPoint (see URL below) is another popular community. This site provides helpful links and how-to guides and does not require a software download. Some sites limit the amount of space, while others offer unlimited space. Before joining one of these communities (see URLs below), evaluate several of them and determine the one or ones that best meets your needs.

For more information on photo communities, photo albums online, and the Web sites mentioned above, visit the Discovering Computers 2002 Apply It Web page (**scsite.com/dc2002/apply.htm**) and click Chapter 1 Apply It #3.

If you are a small business and you would like to advertise and take orders on the Web, you can sell your products at an electronic storefront. Some Web sites provide a means for you to create a storefront directly at their site, from which users around the world can view and make purchases (Figure 1-47). If you have only a single item for sale, you instead might consider putting it for sale on an online auction.

If you simply want to communicate with others on the Web, you can use e-mail, chat rooms, or instant messaging. Many Web sites offer online calendars and address books so that you can share your appointments and contacts with others. The next chapter presents a more detailed discussion of these Internet services.



Welcome to our line of beautiful handpainted Americana country primitive furniture and antiques.

<...NEW ITEM.....

PLEASE READ>>>>>>>>>>>>>>>>>>>>>>>>>:

Due to the upcoming holidays and how busy we get here, they also get very busy in Amish country and furniture items may take longer to get in order to fill your orders.

So we urge you to get all your holiday orders in in time so that we may have time to get the furniture and have it painted and ready for you in time for gift giving.

>>>

Figure 1-47 Users can create an electronic storefront for their home or small business.

CHAPTER SUMMARY

Chapter 1 introduced you to basic computer concepts such as what a computer is, how it works, and what makes it a powerful tool. You learned about the components of a computer. Next, the chapter discussed computer software, networks, and the Internet. The many different categories of computers and computer users also were presented. This chapter was an overview. Many of the terms and concepts introduced will be discussed further in later chapters.

Help Desk Specialist

A Help Desk Specialist is an entryway into the information technology (IT) field. Almost all organizations provide their employees with some type of help desk assistance. Within most companies, this job is one of the least technical. Some of the job requirements may include the following:

- Solve procedural and software questions both in person and over the telephone
- Develop and maintain Help Desk Operations Manuals
- Assist in training new Help Desk personnel

The type of questions one may encounter as a Help Desk Specialist depends on the setting. Someone who works in the computing center of a school would be required to have a broad knowledge of each computing platform used. In most instances, regardless of the setting, this job requires the specialist to be knowledgeable about major software packages in use.

Educational requirements are not as stringent as they are for other jobs in the computer field. In some cases, a high school diploma is sufficient. Advancement within the field requires a minimum of a two-year degree, while management generally requires a bachelor's degree in Information Systems or a related field. Entry-level salaries average $20,000 per year. Managers average between $42,000 and $50,000.

To learn more about the field of Help Desk Specialist as a career, visit the Discovering Computers 2002 Careers Web page (**scsite.com/dc2002/careers.htm**) and click Help Desk Specialist.

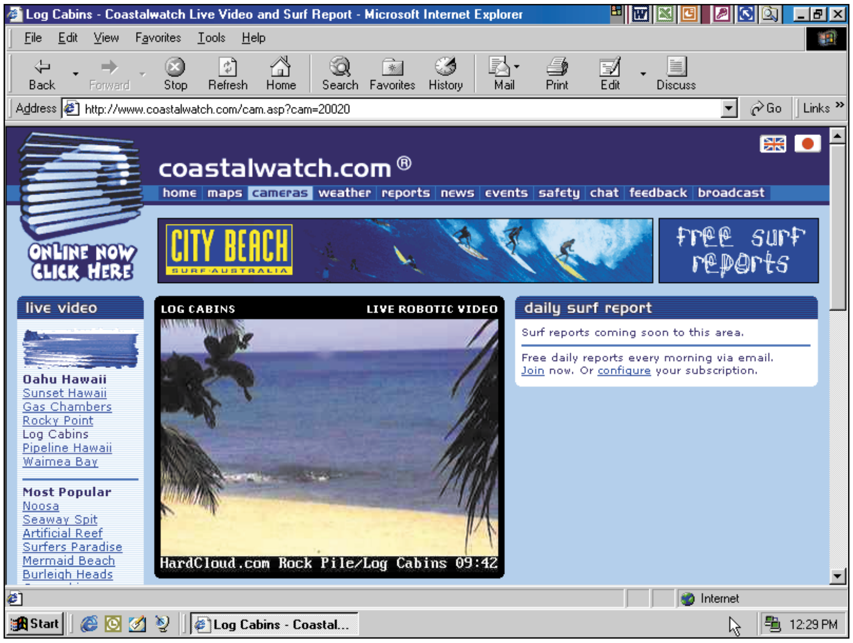
E-FUN E-ENTERTAINMENT

THAT'S ENTERTAINMENT

Surf's Up for Fun Web Sites

Girls just want to have fun, according to singer Cindy Lauper. The Internet abounds with fun sites for both gals and guys, with everything from the Rock and Roll Hall of Fame and Museum to the Rock of Gibraltar.

Do you want to see the attractions at Walt Disney World? Or, how about wild animals at a game preserve in Africa, pandas at the San Diego Zoo, and surfers in Hawaii (Figure 1-48)? Travel to the South Pole and hear the frigid wind blow, to Yellowstone Park to see the Old Faithful geyser, and to Loch Ness for a possible glimpse of the famous monster. Web cams take armchair travelers across the world for views of natural attractions, historical monuments, colleges, and cities. Some of the world's Web cams are listed in Figure 1-49.


Log Cabins - Coastalwatch Live Video and Surf Report - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss
Address http://www.coastalwatch.com/cam.asp?cam=20020
Go Links
coastalwatch.com ®
home maps cameras weather reports news events safety chat feedback broadcast
ONLINE NOW CLICK HERE
CITY BEACH SURF AUSTRALIA
free surf reports
live video
Oahu Hawaii
Sunset Hawaii
Gas Chambers
Rocky Point
Log Cabins
Pipeline Hawaii
Waimea Bay
Most Popular
Noosa
Seaway Spit
Artificial Reef
Surfers Paradise
Mermaid Beach
Burleigh Heads
LOG CABINS
LIVE ROBOTIC VIDEO
HardCloud.com Rock Pile/Log Cabins 09:42
daily surf report
Internet
Start
Log Cabins - Coastal...
12:29 PM

Surf reports coming soon to this area.

Free daily reports every morning via email. Join now. Or configure your subscription.

Figure 1-48 Web cams provide a glimpse of locations throughout the world, including famous surfing beaches in Hawaii.

FUN AND ENTERTAINMENT WEB SITES	URL
Web Cams	
AfriCam - The World's First Virtual Game Reserve	africam.com/
Discovery.com Cams	discovery.com/cams/cams.html
Iowa State Insect Zoo Live Camera	zoocam.ent.iastate.edu
Nesse on the Net! (Loch Ness Monster)	www.lochness.co.uk/livecam
OnlineWeather.com Webcams Index	onlineweather.com/webcams
Panda Cam San Diego Zoo	sandiegozoo.org/special/pandas/pandacam/index.html
The Automated Astrophysical Site-Testing Observatory (AASTO) (South Pole)	bat.phys.unsw.edu.au/~aasto
The Old Faithful Geyser WebCam	www.nps.gov/yell/oldfaithfulcam.htm
Walt Disney World - Theme Park Live Camera	home.disney.com/DisneyWorld/cgi-bin/oneShot.cgi?type=st&park=ds
Wild Birds Unlimited Bird FeederCam	wbu.com/feedercam_home.htm
World Map of Live Webcams	dove.mtx.net.au/~punky/World.html
World Wide Surf Cameras	goan.com/surfcam.shtml
Entertainment	
AMG All Music Guide	allmusic.com
Entertainment Tonight Online	etonline.com
Entertainment Weekly Online	ew.com/ew
Mr. Showbiz: Celebrities	mrshowbiz.go.com/celebrities/index.html
RadioDigest.com	radiodigest.com
Rock and Roll Hall of Fame and Museum	rockhall.com
Spinner.com	spinner.com
The Internet Movie Database (IMDb)	imdb.com
Welcome to E! Online	eonline.com
World Radio Network WRN	wrn.org

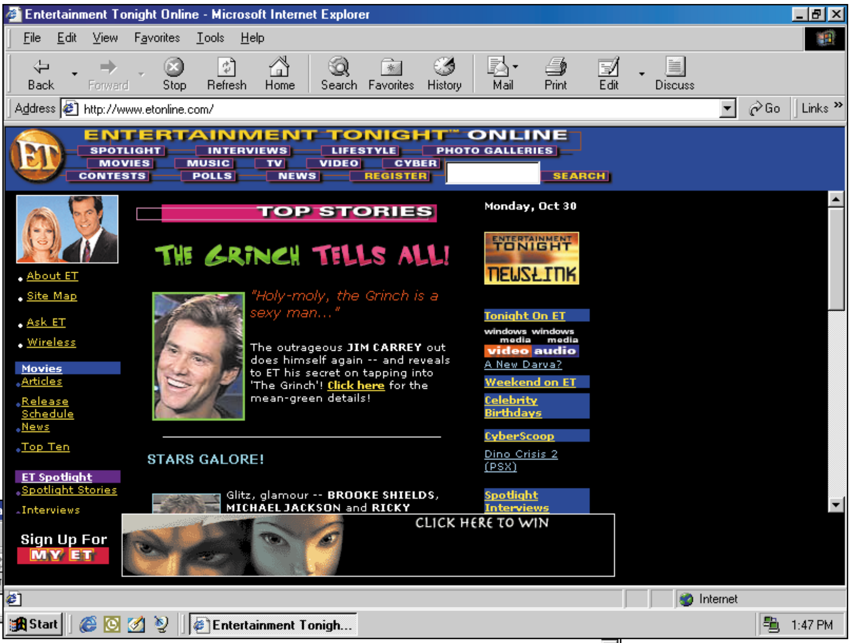
For an updated list of fun and entertainment Web sites, visit scsite.com/dc2002/e-rev.htm.

Figure 1-49 When you visit Web sites offering fun and entertainment resources, you can be both amused and informed.

If you need an update on what happened to Victor and Nikki on *The Young and the Restless* or a preview of the upcoming Julia Roberts movie, the Web can satisfy your entertainment thirst. E! Online, Entertainment Tonight Online (Figure 1-50), and Mr. Showbiz provide the latest features on television and movie stars. The Internet Movie Database contains credits and reviews of more than 120,000 movies.

If your passion is music and radio, the AMG All Music Guide provides backgrounds on new releases and top artists. See and hear the musicians inducted into the Rock and Roll Hall of Fame and Museum (Figure 1-51). The World Radio Network features international public radio programs, such as *The Voice of Russia* and *UN Radio*.

For more information on fun and entertainment Web sites, visit the Discovering Computers 2002 E-Revolution Web page (scsite.com/dc2002/e-rev.htm) and click Fun/Entertainment.

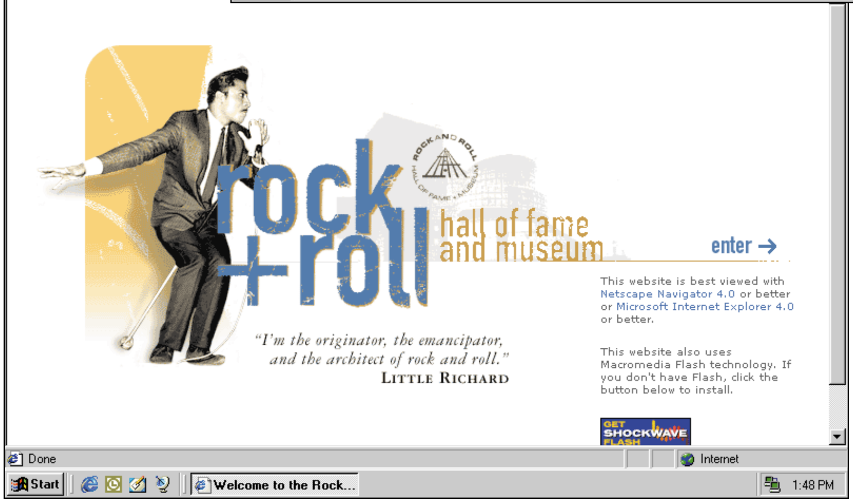


"Holy-moly, the Grinch is a sexy man..."

The outrageous JIM CARREY out does himself again -- and reveals to ET his secret on tapping into 'The Grinch'! Click here for the mean-green details!

Glitz, glamour -- BROOKE SHIELDS, MICHAEL JACKSON and RICKY

Figure 1-50 The entertainment Web sites feature celebrity news and profiles.


Welcome to the Rock and Roll Ha
File Edit View Favorites Tools
Back Forward Stop Refr
Address http://www.rockhall.com/
rock + roll
hall of fame and museum
ROCK AND ROLL HALL OF FAME + MUSEUM
enter →
GET SHOCKWAVE FLASH
Done
Internet
Start
Welcome to the Rock...
1:48 PM

"I'm the originator, the emancipator, and the architect of rock and roll."
LITTLE RICHARD

This website is best viewed with Netscape Navigator 4.0 or better or Microsoft Internet Explorer 4.0 or better.

This website also uses Macromedia Flash technology. If you don't have Flash, click the button below to install.

Figure 1-51 Visitors exploring the Rock and Roll Hall of Fame and Museum Web site will find history, exhibitions, programs, and the names and particulars of the latest inductees.

eREVOLUTION E-FUN E-ENTERTAINMENT *applied:*

1. Visit the World Map of Live Webcams and the Culture Connect Web sites listed in Figure 1-49. View two of the Web cams closest to your hometown, and describe the scenes. Then, visit the Discovery.com Cams Web site and view two of the animal cams in the Cam Universe. What do you observe? Visit another Web site listed in Figure 1-49 and describe the view. What are the benefits of having Web cams at these locations throughout the world?

2. What are your favorite movies? Use The Internet Movie Database Web site listed in Figure 1-49 to search for information about two of these films, and write a brief description of the biographies of the major stars and director for each movie. Then, visit one of the entertainment Web sites and describe three of the featured stories. At the Rock and Roll Hall of Fame and Museum Web site, view the information on Elvis and one of your favorite musicians. Write a paragraph describing the information available on these rock stars.

In Summary

Web Instructions: To display this page from the Web, start your browser and enter the URL scsite.com/dc2002/ch1/summary.htm. Click the links for current and additional information. To listen to an audio version of this In Summary, click the Audio button. To play the audio, RealPlayer must be installed on your computer (download by clicking here).

1

Why Is Computer Literacy Important?

To be successful in today's world, it is crucial to have knowledge and understanding of computers and their uses. Being computer literate is essential as technology advances and computers extend into every facet of daily living.

2

What Is a Computer?

A computer is an electronic machine that operates under the control of instructions stored in its own memory, that can accept data (input), manipulate the data according to specified rules (process), produce results (output), and store the results for future use (**storage**). **Data** is a collection of unorganized facts, figures, and symbols. Computers process data to create information. **Information** is data that is organized, meaningful, and useful. Examples are a paycheck or a student grade report. Data entered into a computer is called **input**. The processed results are called **output**. The cycle of input, process, output, and storage is called the **information processing cycle**.

3

What Are the Components of a Computer?

Hardware is the electric, electronic, and mechanical equipment that makes up a computer. An **input device** allows a user to enter data and commands into the memory of a computer. Six commonly used input devices are a keyboard, mouse, microphone, scanner, PC camera, and digital camera. An **output device** conveys information generated by a computer to the user. Three commonly used output devices are a printer, a monitor, and speakers. The **system unit**, sometimes called a **chassis**, is a box-like case made from metal or plastic that houses the computer circuitry. The two main components of the motherboard are the central processing unit (CPU), which interprets and carries out the instructions that operate a computer, including computations; and **memory**, which is a series of electronic elements that temporarily holds the data and instructions while the processor is processing them. A **storage device** records and retrieves data, information, and instructions to and from a storage medium. Six common storage devices are a floppy disk drive, hard disk drive, CD-ROM drive, Zip® drive, CD-RW drive, and DVD-ROM drive. **Communications devices** allow computer users to exchange items such as data, instructions, and information with another computer.

4

Why Is a Computer a Powerful Tool?

A computer's power is derived from its capability of performing the information processing cycle operations with speed, reliability, and accuracy; its capacity to store huge amounts of data, instructions, and information; and its ability to communicate with other computers.

5

What Are the Categories of Computer Software?

Software, also called a computer program, is the series of instructions that tells the hardware of a computer what to do. Software can be categorized into two types: system software and application software. **System software** controls the operation of the computer and its devices and serves as the interface between a user and the computer's hardware. Two types of system software are the **operating system** (**OS**), which contains instructions that coordinate the activities of hardware devices; and **utility programs**, which perform specific tasks usually related to managing a computer. **Application software** performs specific tasks for users, such as creating word processing documents, spreadsheets, databases, or presentation graphics. A **computer programmer** writes software programs, often following a plan developed by a **systems analyst**.

6 What Is the Purpose of a Network?

A network is a collection of computers and devices connected together via communications media. Computers are networked so users can share **resources** such as hardware devices, software programs, data, and information. When your computer connects to a network, you are **online**.

7 How Are the Internet and the World Wide Web Used?

The world's largest network is the **Internet**, which is a worldwide collection of networks that links together millions of computers. The Internet is used to send messages to other users, obtain information, shop for goods and services, meet or converse with people around the world, and access sources of entertainment and leisure. The World Wide Web, which contains billions of Web pages with text, graphics, sound, video, and links to other Web pages, is one of the more popular segments of the Internet.

8 What Are the Categories of Computers and Their Uses?

The six major categories of computers are personal computers, handheld computers, Internet appliances, mid-range servers, mainframes, and supercomputers. These categories are based on differences in size, speed, processing capabilities, and price. A **personal computer** can perform all of its input, processing, output, and storage activities by itself. Two categories of personal computers are **desktop computers**, which are designed to fit entirely on or under a desk or table, and **notebook computers**, which are small enough to fit on your lap. A **handheld computer**, also called a **palmtop computer**, is a small computer that fits in your hand. One of the most popular handheld computers is the **PDA** (**personal digital assistant**). An **Internet appliance** is a device designed specifically to connect to the Internet. A **mid-range server**, formerly called a **minicomputer**, is larger and more powerful than a workstation computer and often can support up to 4,000 connected users. A **mainframe** is a large, expensive, very powerful computer that can handle hundreds or thousands of connected users simultaneously. A **supercomputer** — the fastest, most powerful, and most expensive computer — is capable of processing more than 12 trillion instructions in a single second.

9 Who Are Computer Users?

Every day, people depend on different types of computers for a variety of applications. A **home user** relies on the computer for entertainment; communications, Web access, and e-mail; reference, research, and education; personal finance; and productivity software. A **small office/home office** (**SOHO**) includes small companies (under 50 employees) and self-employed individuals working from home. These users access the Web; utilize productivity and specialized software; and use e-mail and communications software. **Mobile users** have notebook computers often equipped with a modem so they can work on the road. They often use presentation software and other productivity software. **Large business users** utilize computers to run their businesses by using productivity software, communications software, automated systems for most departments in the company, and large networks. **Power users** require the capabilities of workstations or other powerful computers to design plans, produce publications, create graphic art, and work with **multimedia** that includes text, graphics, sound, video, and other media elements.

10 How Can a User Be a Web Publisher?

Through the Internet, each category of user can access a wealth of information and has the ability to provide information to other connected users around the world. Many users create Web pages. **Publishing a Web page** is the process of making it available on the Internet.

Key Terms

Web Instructions: To display this page from the Web, start your browser and enter the URL scsite.com/dc2002/ch1/terms.htm. Scroll through the list of terms. Click a term to display its definition and a picture. Click the To WEB button for current and additional information about the term from the Web. To see animations, Shockwave and Flash Player must be installed on your computer (download by clicking here).

- all-in-one computer (1.21)
- application service provider (ASP) (1.14)
- application software (1.13)
- central processing unit (CPU) (1.6)
- chassis (1.6)
- communications devices (1.8)
- computer (1.4)
- computer literate (1.4)
- computer program (1.10)
- computer programmer (1.14)
- custom software (1.14)
- data (1.4)
- desktop computer (1.20)
- digital divide (1.30)
- dumb terminals (1.25)
- e-commerce (1.31)
- executes (1.10)
- freeware (1.14)
- garbage in, garbage out (GIGO) (1.9)

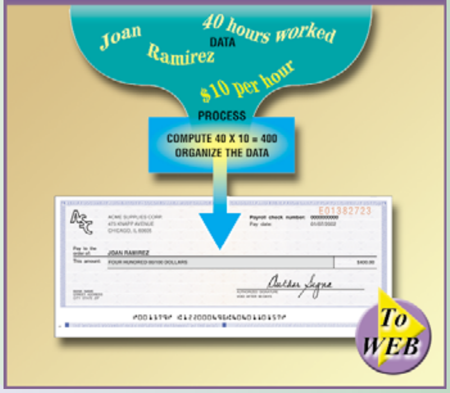
WORKSTATION

Desktop computer designed for work that requires intense calculations and graphics capabilities; sometimes used to refer to any computer connected to a network. (1.21)

- graphical user interface (GUI) (1.12)
- handheld computer (1.23)
- hardware (1.4)
- home user (1.29)
- icon (1.12)
- information (1.4)
- information appliance (1.24)
- information processing cycle (1.5)
- information system (1.27)
- input (1.5)
- input device (1.5)
- install (1.11)
- Internet (1.17)
- Internet appliance (1.24)
- kiosk (1.34)
- laptop computer (1.22)
- large business user (1.32)
- mainframe (1.26)
- memory (1.6)
- mid-range server (1.25)
- minicomputers (1.25)
- mobile users (1.32)
- multimedia (1.35)
- network (1.16)
- notebook computer (1.22)
- online (1.16)
- operating system (OS) (1.12)
- output (1.5)
- output device (1.6)
- packaged software (1.13)
- palmtop computer (1.23)
- PDA (Personal Digital Assistant) (1.23)
- peripheral (1.6)
- personal computer (1.19)
- photo communities (1.37)
- power user (1.35)
- processor (1.6)
- program (1.10)
- programmer (1.14)
- public-domain software (1.14)
- publishing (1.36)
- resources (1.16)

INFORMATION

Information is data that is organized, meaningful, and useful. A computer processes data into information. (1.4)



- server (1.21)
- shareware (1.14)
- small office/home office (SOHO) (1.29)
- smart pager (1.24)
- smart phone (1.24)
- software (1.4)
- stand-alone computer (1.21)
- storage (1.5)
- storage device (1.7)
- supercomputer (1.26)
- system software (1.12)
- system unit (1.6)
- systems analyst (1.14)
- telecommuting (1.34)
- terminal (1.25)
- tower model (1.20)
- user (1.4)
- utility program (1.12)
- Web cam (1.29)
- Web-enabled cellular telephone (1.24)
- Web-enabled pager (1.24)
- workstation (1.21)

Learn It Online

Web Instructions: To display this page from the Web, start your browser and then enter the URL scsite.com/dc2002/ch1/learn.htm.

1. Web Guide

Click Web Guide to display the Guide to World Wide Web Sites and Searching Techniques Web page. Click Reference and then click AskEric Virtual Library. Click AskEric InfoGuides and search for Computer Literacy. Click a search results link of your choice. Use your word processing program to prepare a brief report on what you learned and submit your assignment to your instructor.

2. Scavenger Hunt

Click Scavenger Hunt. Print a copy of the Scavenger Hunt page; use this page to write down your answers as you search the Web. Submit your completed page to your instructor.

3. Who Wants to Be a Computer Genius?

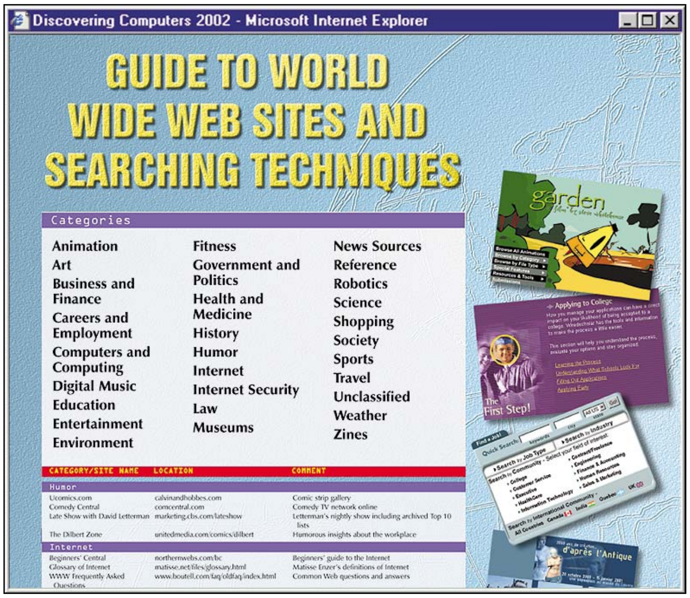
Click Computer Genius to find out if you are a computer genius. Directions on how to play the game will display. When you are ready to play, click the PLAY button. Submit your score to your instructor.

4. Wheel of Terms

Click Wheel of Terms to reinforce important terms you learned in this chapter by playing the Shelly Cashman Series version of this popular game. Directions on how to play the game will display. When you are ready to play, click the PLAY button. Submit your score to your instructor.

5. Career Corner

Click Career Corner to display the Hire-Ed page. Search for jobs in your state. Write a brief report on the jobs you found. Submit the report to your instructor.


Discovering Computers 2002 - Microsoft Internet Explorer

GUIDE TO WORLD WIDE WEB SITES AND SEARCHING TECHNIQUES

Categories

Animation
Art
Business and Finance
Careers and Employment
Computers and Computing
Digital Music
Education
Entertainment
Environment
Fitness
Government and Politics
Health and Medicine
History
Humor
Internet
Internet Security
Law
Museums
News Sources
Reference
Robotics
Science
Shopping
Society
Sports
Travel
Unclassified
Weather
Zines

CATEGORY/SITE NAME	LOCATION	COMMENT
Humor		
Ucomics.com	calvinandhobbes.com	Comic strip gallery
Comedy Central	comcentral.com	Comedy TV network online
Late Show with David Letterman	marketing.cbs.com/lateshow	Letterman's nightly show including archived Top 10 lists
The Dilbert Zone	unitedmedia.com/comics/dilbert	Humorous insights about the workplace
Internet		
Beginners' Central	northernwebs.com/bc	Beginners' guide to the Internet
Glossary of Internet	matisse.net/files/glossary.html	Matisse Enzer's definitions of Internet
WWW Frequently Asked Questions	www.boutell.com/faq/oldfaq/index.html	Common Web questions and answers

6. Search Sleuth

Click Search Sleuth to learn search techniques that will help make you a research expert. Submit the completed assignment to your instructor.

7. Crossword Puzzle Challenge

Click Crossword Puzzle Challenge. Complete the puzzle to reinforce skills you learned in this chapter. Directions on how to play the game will display. When you are ready to play, click the PLAY button. Submit the completed puzzle to your instructor.

8. Practice Test

Click Practice Test. Answer each question. When completed, enter your name and click the Grade Test button to submit the quiz for grading. Make a note of any missed questions. If required, print a copy to submit to your instructor.

Checkpoint

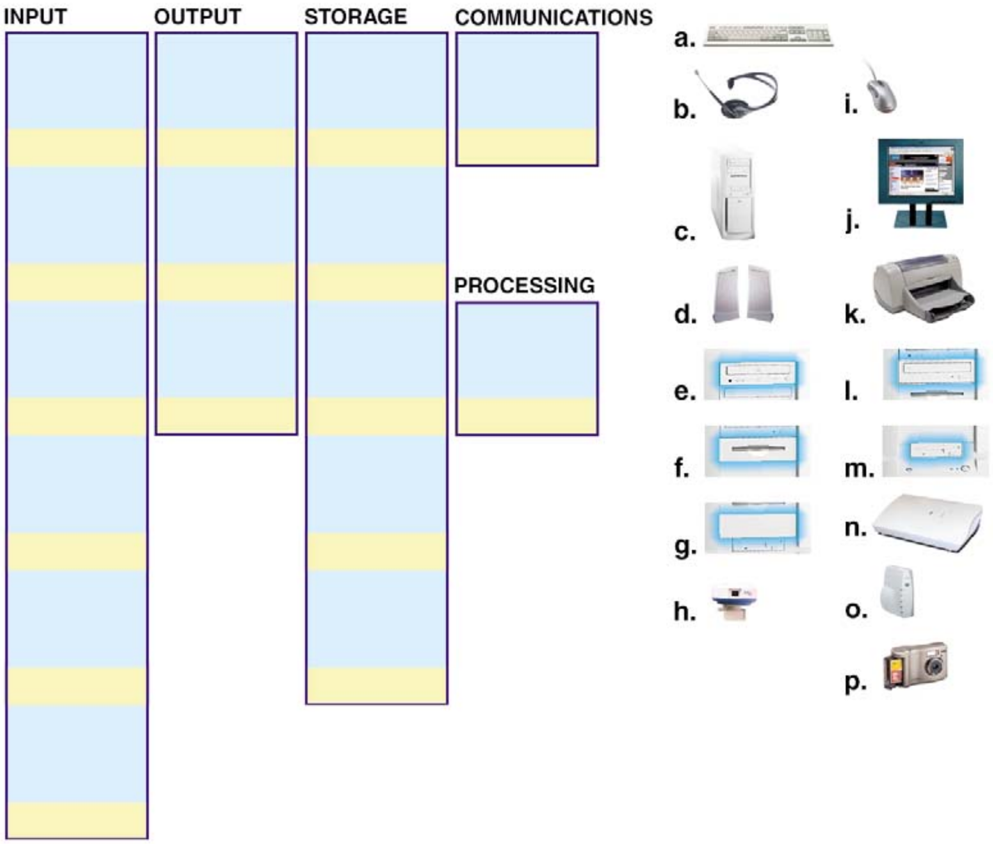
Web Instructions: To display this page from the Web, start your browser and enter the URL scsite.com/dc2002/ch1/check.htm. Click the links for current and additional information. To experience the animation and interactivity, Shockwave and Flash Player must be installed on your computer (download by clicking here.)

LABEL THE FIGURE

Instructions: Categorize these common computer hardware components.

Write the letter next to each component on the right in an appropriate blue box. Then write the words from the list on the left in the appropriate yellow boxes to identify the hardware components.

monitor
speakers
keyboard
mouse
printer
system unit
hard disk drive
CD-ROM or DVD-ROM drive
floppy disk drive
Zip drive
modem
digital camera
microphone
PC video camera
scanner
CD-RW drive



MATCHING

Instructions: Match each term from the column on the left with the best description from the column on the right.

_______ 1. data
_______ 2. information
_______ 3. output
_______ 4. storage
_______ 5. input

a. An area in a computer that can hold data and information for future use.
b. Someone who communicates with a computer or uses the information it generates.
c. A collection of raw unprocessed facts, figures, and symbols.
d. Data or instructions a user enters into a computer.
e. Data that is organized, meaningful, and useful.
f. Data that has been processed into information.
g. The series of instructions that tells the hardware how to perform tasks.

MULTIPLE CHOICE

Instructions: Select the letter of the correct answer for each of the following questions.

1. ___________ is the electric, electronic, and mechanical equipment that makes up a computer.
   a. Hardware
   b. Software
   c. The operating system
   d. The GUI
2. A(n) ___________ is software that consists of programs that perform specific tasks for users.
   a. operating system
   b. virus
   c. application
   d. GUI
3. Software donated for public use that has no software restrictions is ___________ .
   a. shareware
   b. public domain software
   c. freeware
   d. copyrighted
4. Someone who writes software programs is called a ___________ .
   a. systems analyst
   b. hardware specialist
   c. network manager
   d. programmer
5. A Web ___________ is a collection of related **Web pages**.
   a. site
   b. browser
   c. interface
   d. set

SHORT ANSWER

Instructions: Write a brief answer to each of the following questions.

1. What are some ways people use computers in the home, at work, and at school? ___________ What does it mean to be computer literate? ___________
2. How is hardware different from software? ___________ Why is hardware useless without software? ___________
3. What is a peripheral device? ___________ What hardware components are considered peripheral devices? ___________
4. What are six common storage devices? ___________ How are they different? ___________
5. Why do people use the Internet? ___________ How do most users connect to the Internet? ___________

WORKING TOGETHER

Instructions: Working with a group of your classmates, complete the following team exercise.

Six commonly used input devices are listed in this chapter. These devices include a keyboard, mouse, microphone, scanner, PC camera, and digital camera. Using the Internet or other resources, prepare a report on each of the devices. Discuss how and when you would use one device instead of another. What are some of the different features available in each device? How would you determine which keyboard, mouse, and so on is the best for your particular needs? Share your reports with the class.

In The Lab

Web Instructions: To display this page from the Web, start your browser and enter the URL scsite.com/dc2002/ch1/lab.htm. Click the links for current and additional information.

Using Windows Help

1

This exercise uses Windows 98 or Windows 2000 procedures. In the past, when you purchased computer software, you also received large printed manuals that attempted to answer any questions you might have. Today, Help usually is offered directly on the computer. To make it easy to find exactly the Help you need, Windows Help is arranged on three sheets: Contents, Index, and Search. Windows 2000 includes a fourth sheet, Favorites. Click the Start button on the taskbar and then click Help on the Start menu. Click the Contents tab in the Help window. What do you see? When would you use the Contents sheet to find Help? Click the Index tab. What do you see? When would you use the Index sheet to find Help? Click the Search tab. What do you see? When would you use the Search sheet to find Help? If you are using Windows 2000, click the Favorites tab. What do you see? When would you use the Favorites sheet to find Help? Close the Help window.

What's New in Microsoft Windows?

2

This exercise uses Windows 98 or Windows 2000 procedures. Click the Start button on the taskbar and then click Help on the Start menu. Click the Contents tab in the Windows Help window. Click the Introducing Windows 98 or Windows 2000 book, and then click the What's New in Windows 98 or Windows 2000 book. Click a topic in which you are interested. Click each topic in the right pane. How is this version of Windows better than previous versions of Windows? Will the improvement make your work more efficient? Why or why not? What improvement, if any, would you still like to see? Close the Windows Help window.

Improving Mouse Skills

3

This exercise uses Windows 98 or Windows 2000 procedures. Click the Start button on the taskbar. Point to Programs on the Start menu, point to Accessories on the Programs submenu, point to Games on the Accessories submenu, and then click Solitaire on the Games submenu. When the Solitaire window displays, click the Maximize button. Click Help on the Solitaire menu bar, and then click Help Topics. Click the Contents tab. Click the The object of Solitaire topic and read the information. Click the Playing Solitaire topic. Read and print the information by clicking the Solitaire Help window's Options button, clicking Print, and then clicking the OK button. Click the Close button in the Solitaire Help window. Play the game of Solitaire. Close the Solitaire window.

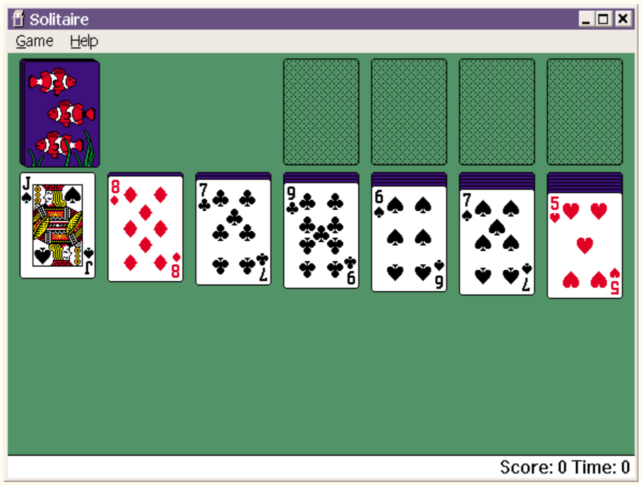
Learning About Your System

4

You can learn some important information about your computer system by studying the system properties. Click the Start button. Point to Settings on the Start menu, and then click Control Panel on the Settings submenu. Double-click the System icon in the Control Panel window. Click the General tab in the System Properties dialog box. Use the General sheet to find out the answers to these questions:

- What operating system does your computer use?
- To whom is your system registered?
- What type of processor does your computer have?
- How much memory (RAM) does your computer have?

Close the System Properties dialog box. Close the Control Panel window.



Web Work

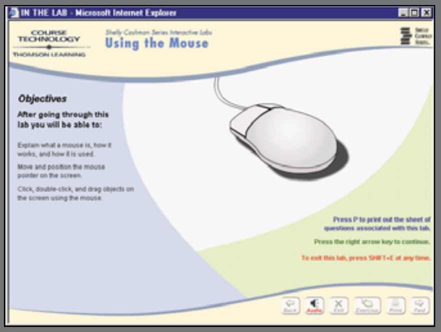
Web Instructions: To display this page from the Web, start your browser and enter the URL scsite.com/dc2002/ch1/web.htm. To view At The Movies in exercise 1, RealPlayer must be installed on your computer (download by clicking here). To use the Shelly Cashman Series Using the Mouse Lab and Using the Keyboard Lab from the Web, Shockwave and Flash Player must be installed on your computer (download by clicking here).

Technosaurs

To view the Technosaurs movie, click the button to the left or click the Play button to the right. Watch the movie, and then complete the exercise by answering the questions below. Just as rapid, massive climate changes are said to have rendered dinosaurs extinct, dizzying changes in computer technology challenge today's companies to evolve, adapt, or… die off. Traditional brokerages are losing billions of dollars to online trading. Travel Web sites on the Internet are siphoning billions of dollars from bricks-and-mortar travel agencies. Changes in communications hardware and software for sales and service functions threaten companies as well. What are some of the new technologies that radically can improve the competitiveness of a company's sales force? What are some of the new software programs to manage customer relationships better?

Shelly Cashman Series Using the Mouse Lab

1. To start the Shelly Cashman Series Using the Mouse Lab, complete the step that applies to you.
   a. Running from the World Wide Web: Enter the URL, www.scsite.com/sclabs/menu.htm; or display the Web Work page (see instructions at the top of this page) and then click the button to the left.
   b. Running from a CD-ROM: Insert the Shelly Cashman Series Labs with Audio CD-ROM in your CD-ROM drive.
   c. Running the No-Audio Version from a Hard Disk or Network: Click the Start button on the taskbar, point to Shelly Cashman Series Labs on the Programs submenu, and then click Interactive Labs.
2. When the Shelly Cashman Series IN THE LAB screen shown in the figure to the right displays, follow the instructions on the screen to start the Using the Mouse Lab.
3. When the Using the Mouse screen displays, read the objectives.
4. If assigned, follow the instructions on the screen to print the questions associated with the Lab.
5. Follow the instructions on the screen to continue in the Lab.
6. When completed, follow the instructions on the screen to quit the lab.
7. If assigned, submit your answers for the printed questions to your instructor.


IN THE LAB - Microsoft Internet Explorer

COURSE TECHNOLOGY
THOMSON LEARNING

Shelly Cashman Series Interactive Labs
Using the Mouse

Objectives

After going through this lab you will be able to:

Explain what a mouse is, how it works, and how it is used.

Move and position the mouse pointer on the screen.

Click, double-click, and drag objects on the screen using the mouse.

Press P to print out the sheet of questions associated with this lab.

Press the right arrow key to continue.

To exit this lab, press SHIFT+E at any time.

Shelly Cashman Series Using the Keyboard Lab

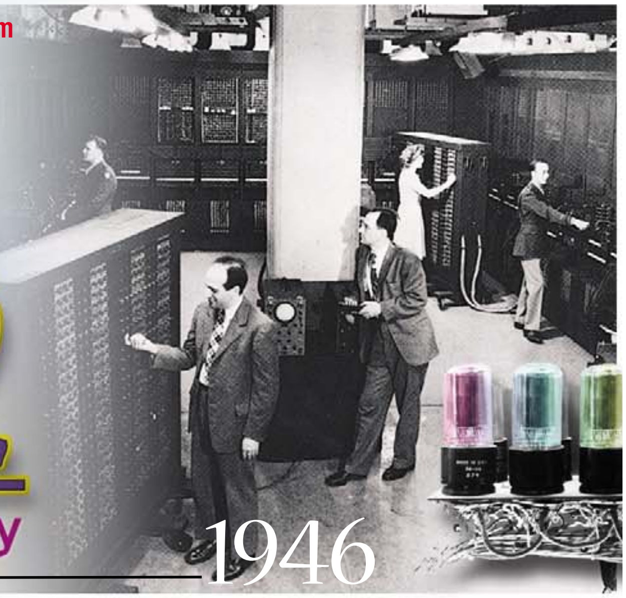
Follow the appropriate instructions in Web Work Exercise 2 above to start and use the Shelly Cashman Series Using the Keyboard Lab. If you are running from the Web, enter the URL, www.scsite.com/sclabs/menu.htm; or display the Web Work page (see instructions at the top of this page) and then click the button to the left.

Learn the Net

No matter how much computer experience you have, navigating the Net for the first time can be intimidating. How do you get started? Click the button to the left and complete this exercise to discover how you can find out everything you want to know about the Internet.

TIME Line 2002

Milestones in Computer History



1937

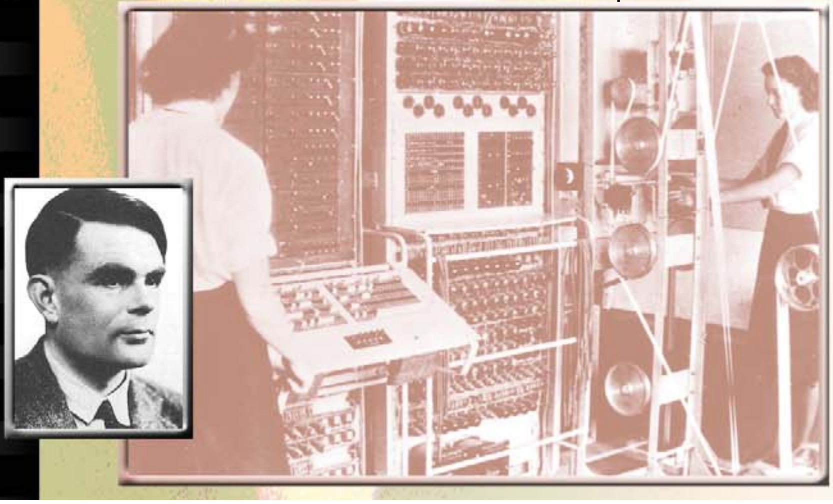
Dr. John V. Atanasoff and Clifford Berry design and build the first electronic digital computer. Their machine, the Atanasoff-Berry-Computer, or ABC, provides the foundation for advances in electronic digital computers.

1946

Dr. John W. Mauchly and J. Presper Eckert, Jr. complete work on the first large-scale electronic, general-purpose digital computer. The ENIAC (Electronic Numerical Integrator And Computer) weighs thirty tons, contains 18,000 vacuum tubes, occupies a thirty-by-fifty-foot space, and consumes 160 kilowatts of power. The first time it is turned on, lights dim in an entire section of Philadelphia.

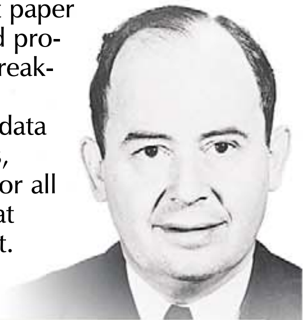
1943

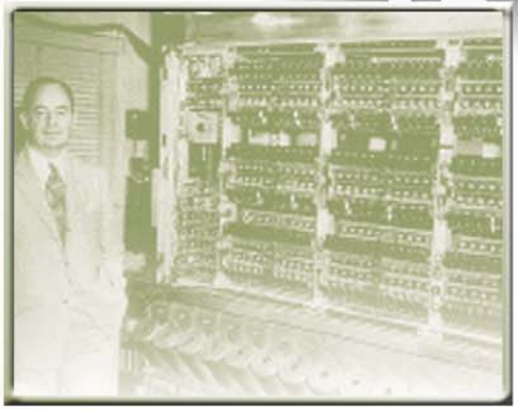
During World War II, British scientist Alan Turing designs the Colossus, an electronic computer created for the military to break German codes. The computer's existence is kept secret until the 1970s.



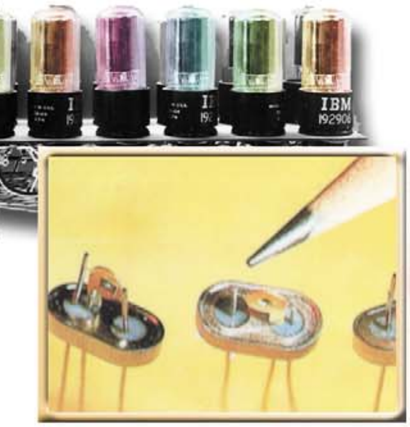
1945

Dr. John von Neumann writes a brilliant paper describing the stored program concept. His breakthrough idea, where memory holds both data and stored programs, lays the foundation for all digital computers that have since been built.





Web Instructions: *To gain World Wide Web access to additional and up-to-date information regarding this special feature, start your browser and enter the URLs at the top of each page.*



1947

William Shockley, John Bardeen, and Walter Brattain invent the transfer resistance device, eventually called the transistor. The transistor would revolutionize computers, proving much more reliable than vacuum tubes.

1952

Dr. Grace Hopper considers the concept of reusable software in her paper, "The Education of a Computer." The paper describes how to program a computer with symbolic notation instead of the detailed machine language that had been used.

1951

The first commercially available electronic digital computer, the UNIVAC I (UNIVersal Automatic Computer), is introduced by Remington Rand. Public awareness of computers increases when the UNIVAC I, after analyzing only 5 percent of the popular vote, correctly predicts that Dwight D. Eisenhower will win the presidential election.

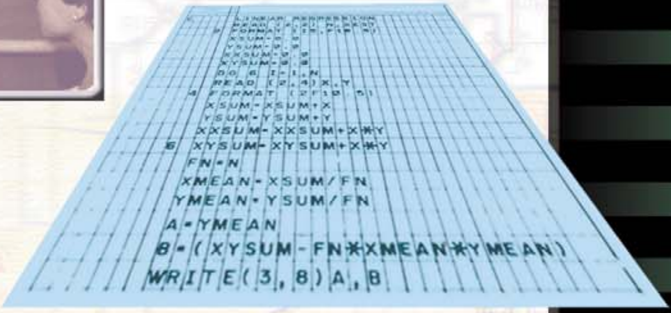
1953

The IBM model 650 is one of the first widely used computer systems. Originally planning to produce only 50 machines, the system is so successful that eventually IBM manufactures more than 1,000. With the IBM 700 series of machines, the company will dominate the mainframe market for the next decade.

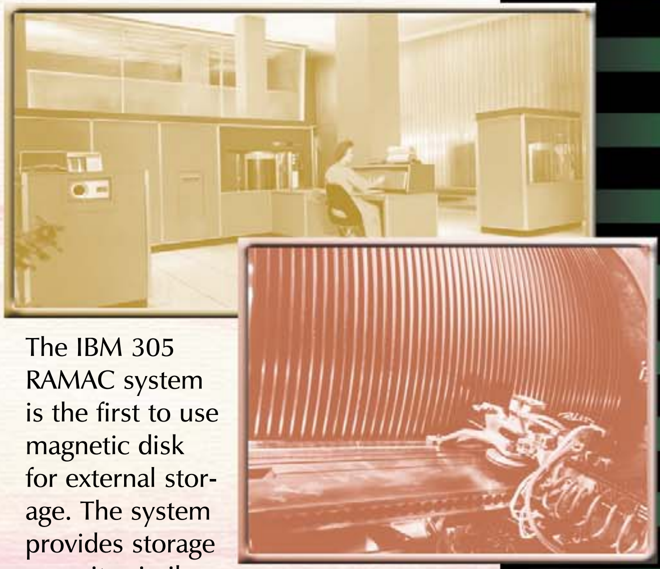
Core memory, developed in the early 1950s, provides much larger storage capacity than vacuum tube memory.

1957

FORTRAN (FORmula TRANslation), an efficient, easy-to-use programming language, is introduced by John Backus.



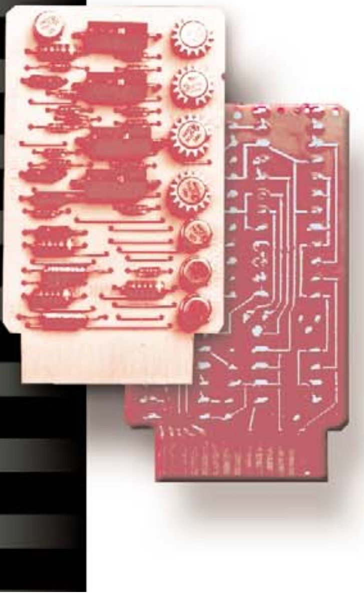
```
      LINEAR REGRESSION
      XSUM=0.0
      YSUM=0.0
      XXSUM=0.0
      XYSUM=0.0
      DO 6 I=1,N
      READ (2,4) X,Y
    4 FORMAT (2F10.5)
      XSUM=XSUM+X
      YSUM=YSUM+Y
      XXSUM=XXSUM+X*Y
    6 XYSUM=XYSUM+X*Y
      FN=N
      XMEAN=XSUM/FN
      YMEAN=YSUM/FN
      A=YMEAN
      B=(XYSUM-FN*XMEAN*YMEAN)
      WRITE(3,8)A,B
```



The IBM 305 RAMAC system is the first to use magnetic disk for external storage. The system provides storage capacity similar to magnetic tape that previously was used, but offers the advantage of semi-random access capability.

1958

Computers built with transistors mark the beginning of the second generation of computer hardware.



1959

IBM introduces two smaller, desk-sized computers: the IBM 1401 for business and the IBM 1602 for scientists. The IBM 1602 initially is called the CADET, but IBM drops the name when campus wags claim it is an acronym for, Can't Add, Doesn't Even Try.

More than 200 programming languages have been created.

1960

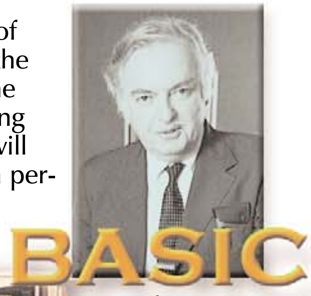
COBOL, a high-level business application language, is developed by a committee headed by Dr. Grace Hopper. COBOL uses English-like phrases and runs on most business computers, making it one of the more widely used programming languages.

1964

The number of computers has grown to 18,000.

Third-generation computers, with their controlling circuitry stored on chips, are introduced. The IBM System/360 computer is the first family of compatible machines, merging science and business lines.

1965



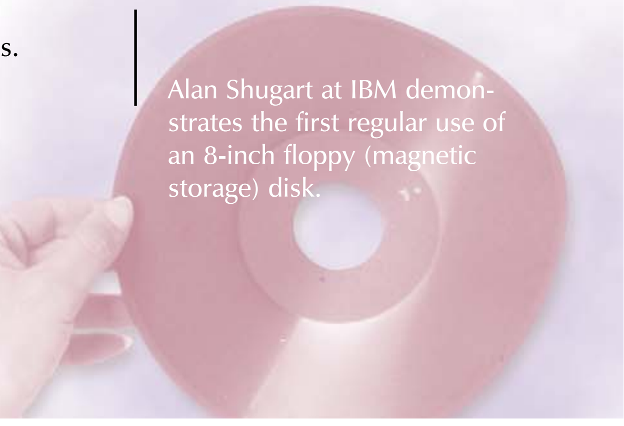
Dr. John Kemeny of Dartmouth leads the development of the BASIC programming language. BASIC will be widely used on personal computers.

Digital Equipment Corporation (DEC) introduces the first minicomputer, the PDP-8. The machine is used extensively as an interface for time-sharing systems.

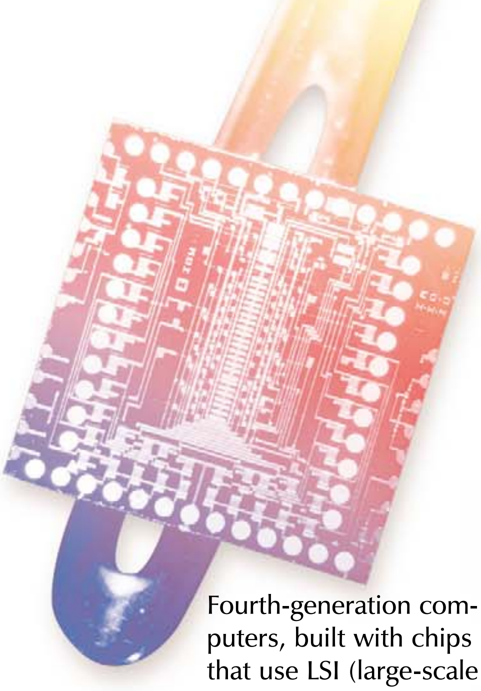
1968

Computer Science Corporation becomes the first software company listed on the New York Stock Exchange.

In a letter to the editor titled, “GO TO Statements Considered Harmful,” Dr. Edsger Dijsktra introduces the concept of structured programming, developing standards for constructing computer programs.



Alan Shugart at IBM demonstrates the first regular use of an 8-inch floppy (magnetic storage) disk.



1970

Fourth-generation computers, built with chips that use LSI (large-scale integration) arrive. While the chips used in 1965 contained as many as 1,000 circuits, the LSI chip contains as many as 15,000.

Ethernet, the first local area network (LAN), is developed at Xerox PARC (Palo Alto Research Center) by Robert Metcalf. The LAN allows computers to communicate and share software, data, and peripherals. Initially designed to link minicomputers, Ethernet will be extended to personal computers.

1975

MITS, Inc. advertises one of the first microcomputers, the Altair. Named for the destination in an episode of Star Trek, the Altair is sold in kits for less than $400. Although initially it has no keyboard, no monitor, no permanent memory, and no software, 4,000 orders are taken within the first three months.

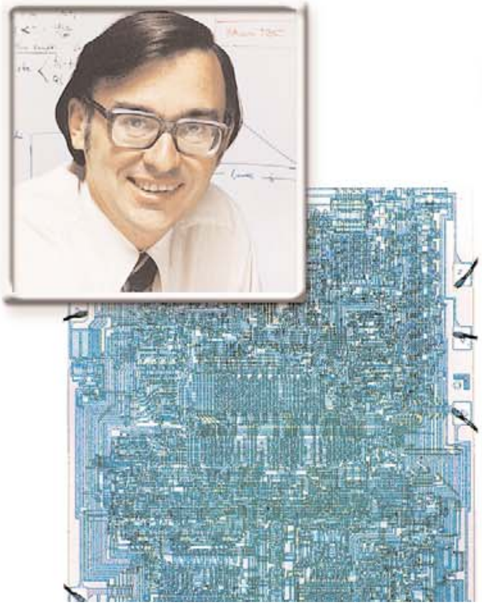
1969

The ARPANET network, a predecessor of the Internet, is established.

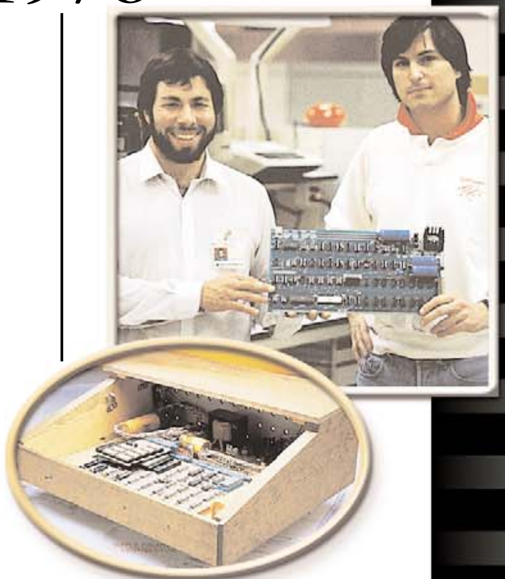
Under pressure from the industry, IBM announces that some of its software will be priced separately from the computer hardware. This unbundling allows software firms to emerge in the industry.

1971

Dr. Ted Hoff of Intel Corporation develops a microprocessor, or microprogrammable computer chip, the Intel 4004.



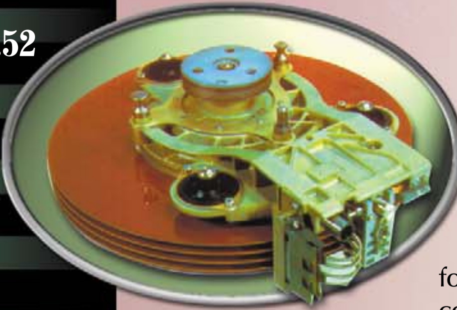
1976



Steve Wozniak and Steve Jobs build the first Apple computer. A subsequent version, the Apple II, is an immediate success. Adopted by elementary schools, high schools, and colleges, for many students the Apple II is their first contact with the world of computers.

scsite.com/dc2002/ch1/timeline5.htm

1980



Alan Shugart presents the Winchester hard drive, revolutionizing storage for personal computers.

IBM offers Microsoft Corporation co-founder, Bill Gates, the opportunity to develop the operating system for the soon-to-be announced IBM personal computer. With the development of MS-DOS, Microsoft achieves tremendous growth and success.

1982

Hayes introduces the 300 bps smart modem. The modem is an immediate success.

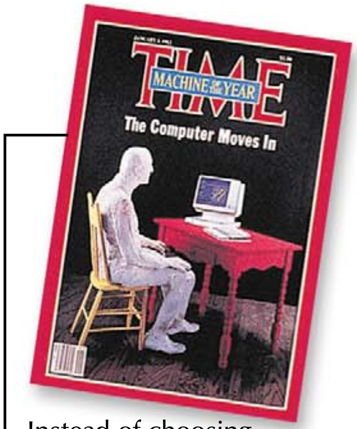
COMPAQ

Compaq, Inc. is founded to develop and market IBM-compatible PCs.

3.275 Million

3,275,000 personal computers are sold, almost 3,000,000 more than in 1981.

1983

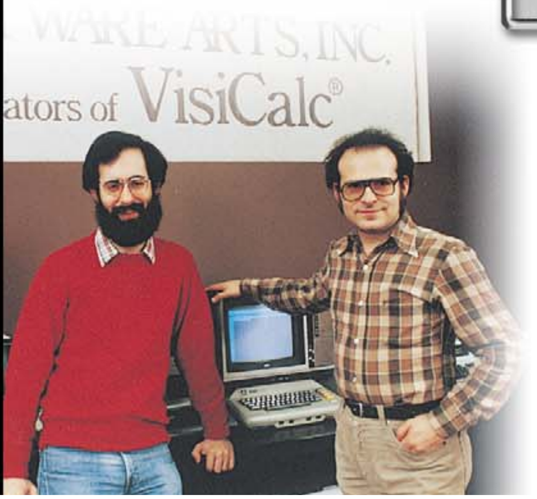


Instead of choosing a person for its annual award, TIME magazine names the computer Machine of the Year for 1982, acknowledging the impact of computers on society.

1979

The first public online information services, CompuServe and the Source, are founded.

VisiCalc, a spreadsheet program written by Bob Frankston and Dan Bricklin, is introduced. Originally written to run on Apple II computers, VisiCalc will be seen as the most important reason for the acceptance of personal computers in the business world.

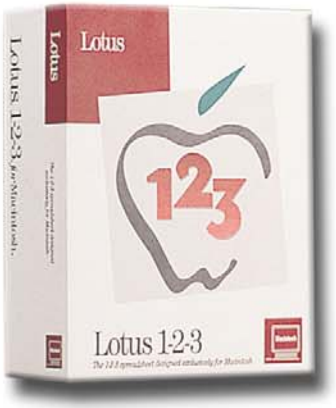


1981

The IBM PC is introduced, signaling IBM's entrance into the personal computer marketplace. The IBM PC quickly garners the largest share of the personal computer market and becomes the personal computer of choice in business.

1983

Lotus Development Corporation is founded. Its spreadsheet software, Lotus 1-2-3, which combines spreadsheet, graphics, and database programs in one package, becomes the best-selling program for IBM personal computers.

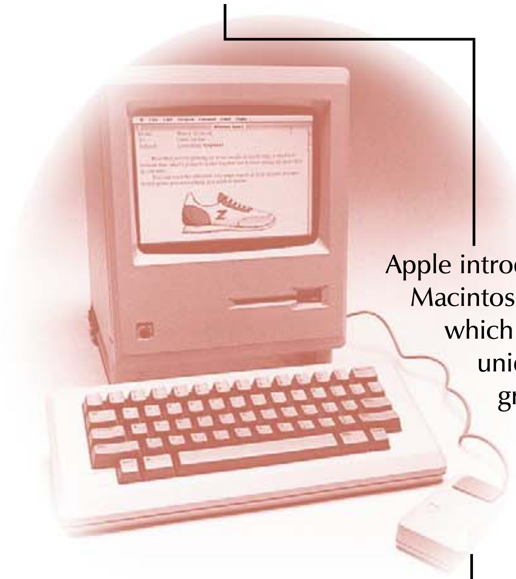


scsite.com/dc2002/ch1/timeline6.htm

1984

IBM introduces a personal computer, called the PC AT, that uses the Intel 80286 microprocessor.

Apple introduces the Macintosh computer, which incorporates a unique, easy-to-learn, graphical user interface.



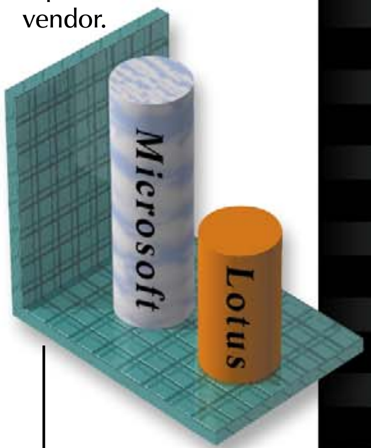
Hewlett-Packard announces the first LaserJet printer for personal computers.

1987

Several personal computers utilizing the powerful Intel 80386 microprocessor are introduced. These machines perform processing that once only large systems could handle.

1988

Microsoft surpasses Lotus Development Corporation to become the world's top software vendor.



1989

The Intel 486 becomes the world's first 1,000,000 transistor microprocessor. It crams 1.2 million transistors on a .4" x .6" sliver of silicon and executes 15,000,000 instructions per second — four times as fast as its predecessor, the 80386 chip.

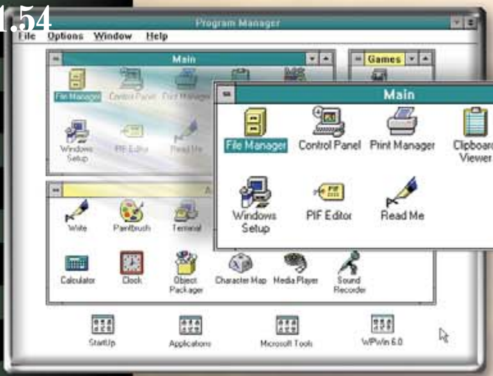
While working at CERN, Switzerland, Tim Berners-Lee invents an Internet-based hypermedia enterprise for information sharing. Berners-Lee will call this innovation the World Wide Web.

scsite.com/dc2002/ch1/timeline7.htm

1991

World Wide Web Consortium releases standards that describe a framework for linking documents on different computers.

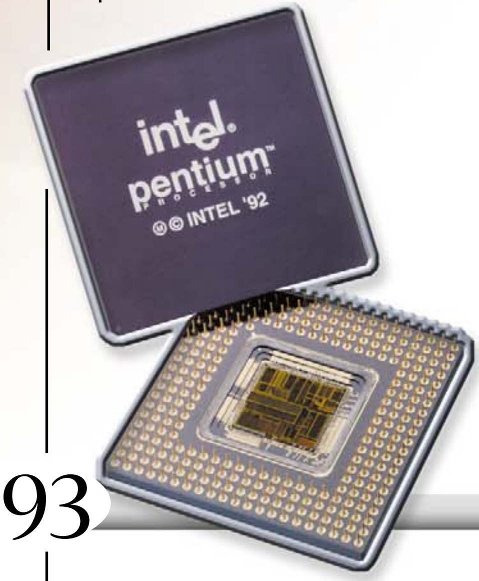
1992

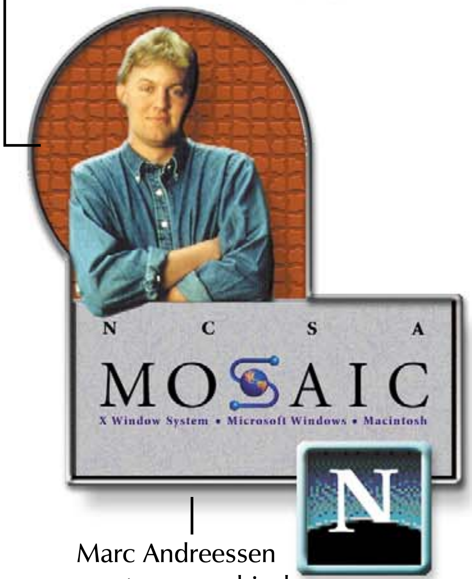


Microsoft releases Windows 3.1, the latest version of its Windows operating system. Windows 3.1 offers improvements such as TrueType fonts, multimedia capability, and object linking and embedding (OLE). In two months, 3,000,000 copies of Windows 3.1 are sold.

1993

Several companies introduce computer systems using the Pentium® microprocessor from Intel. The Pentium® chip is the successor to the Intel 486 processor. It contains 3.1 million transistors and is capable of performing 112,000,000 instructions per second.

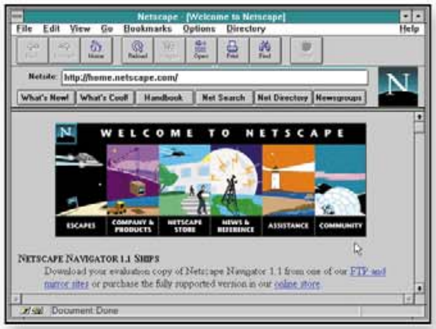



N C S A
MOSAIC
X Window System • Microsoft Windows • Macintosh
N

Marc Andreessen creates a graphical Web browser called Mosaic. This success leads to the organization of Netscape Communications Corporation.

The White House launches its Web page. The site includes an interactive citizens' handbook and White House history and tours.

1994



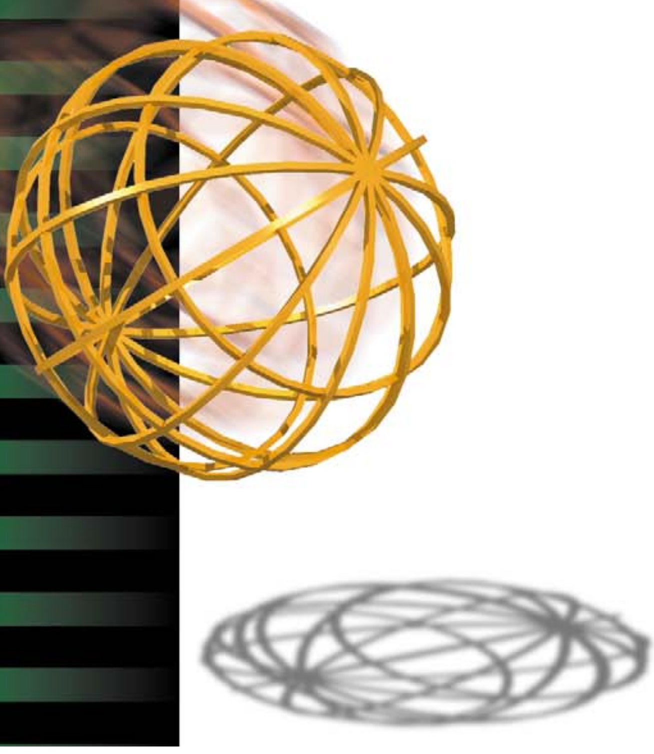
http://home.netscape.com/

NETSCAPE NAVIGATOR 1.1 SHIPS

Download your evaluation copy of Netscape Navigator 1.1 from one of our FTP and mirror sites or purchase the fully supported version in our online store.

Jim Clark and Marc Andreessen found Netscape and launch Netscape Navigator 1.0, a browser for the World Wide Web.

Linus Torvalds creates the Linux kernel, a UNIX-like operating system that he releases free across the Internet for further enhancement by other programmers.



scsite.com/dc2002/ch1/timeline8.htm

Sun Microsystems launches Java, an object-oriented programming language that allows users to write one application for a variety of computer platforms. Java becomes one of the hottest Internet technologies.

1995

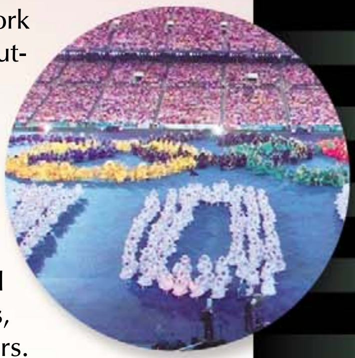
Microsoft releases Windows 95, a major upgrade to its Windows operating system. Windows 95 consists of more than 10,000,000 lines of computer instructions developed by 300 person-years of effort. More than 50,000 individuals and companies test the software before it is released.

1996

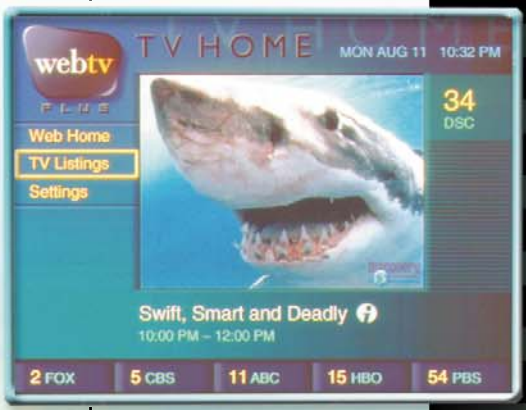
U.S. Robotics introduces PalmPilot, a handheld personal organizer. The PalmPilot's user friendliness and low price make it a standout next to more expensive personal digital assistants (PDAs).

Microsoft releases Windows NT 4.0, an operating system for client-server networks. Windows NT's management tools and Wizards make it easier for developers to build and deploy business applications.

The Summer Olympics in Atlanta makes extensive use of computer technology, using an IBM network of 7,000 personal computers, 2,000 pagers and wireless devices, and 90 industrial-strength computers to share information with more than 150,000 athletes, coaches, journalists, and Olympics staff members, and millions of Web users.



Two out of three employees in the United States have access to a personal computer, and one out of every three homes has a personal computer. Fifty million personal computers are sold worldwide and more than 250,000,000 are in use.



An innovative technology called webtv combines television and the Internet by providing viewers with tools to navigate the Web.

Deep Blue, an IBM supercomputer, defeats world chess champion Gary Kasparov in a six-game chess competition. Millions of people follow the 9-day long rematch on IBM's Web site.

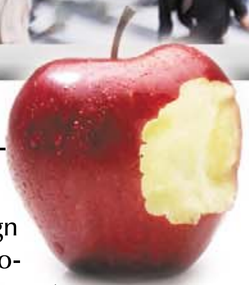
Intel introduces the Pentium® II processor with 7.5 million transistors. The new processor, which incorporates MMX™ technology, processes video, audio, and graphics data more efficiently and supports applications such as movie-editing, gaming, and more.

Fifty million users are connected to the Internet and World Wide Web.

More than 10,000,000 people take up telecommuting the capability of working at home and communicating with an office via computer. More and more firms embrace telecommuting to help increase productivity, reduce absenteeism, and provide greater job satisfaction.

1997

1998



Apple and Microsoft sign a joint technology development agreement. Microsoft buys $150,000,000 of Apple stock.

Microsoft releases Internet Explorer 4.0 and seizes a key place in the Internet arena. This new Web browser is greeted with tremendous customer demand.

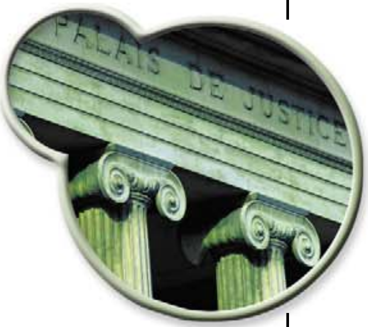
DVD (Digital Video Disc), the next generation of optical disc storage technology, is introduced. DVD can store computer, audio, and video data in a single format, with the capability of producing near-studio quality. By year's end, 500,000 DVD players are shipped worldwide.

E-commerce, or electronic commerce – the marketing of goods and services over the Internet – booms. Companies such as Dell, E*TRADE, and Amazon.com spur online shopping, allowing buyers to obtain everything from hardware and software to financial and travel services, insurance, automobiles, books, and more.

Microsoft ships Windows 98, an upgrade to Windows 95. Windows 98 offers improved Internet access, better system performance, and support for a new generation of hardware and software. In six months, more than 10,000,000 copies of Windows 98 are sold worldwide.

scsite.com/dc2002/ch1/timeline10.htm

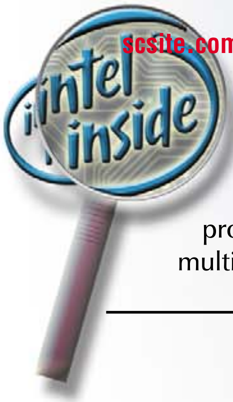
The Department of Justice's broad antitrust lawsuit asks that Microsoft offer Windows 98 without the Internet Explorer browser or that it bundle the competing Netscape Navigator browser with the operating system.



1998

Compaq Computer, the United States' leading personal computer manufacturer, buys Digital Equipment Corporation in the biggest take-over in the history of the computer industry. Compaq becomes the world's second largest computer firm, behind IBM.

Apple Computer introduces the iMac, the latest version of its popular Macintosh computer. The iMac abandons such conventional features as a floppy disk drive but wins customers with its futuristic design, see-through case, and easy setup. Consumer demand outstrips Apple's production capabilities, and some vendors are forced to begin waiting lists.



Intel releases its Pentium® III processor, which provides enhanced multimedia capabilities.

U.S. District Judge Thomas Penfield Jackson rules in the antitrust lawsuit brought by the Department of Justice and 19 states that Microsoft used its monopoly power to stifle competition.

Governments and businesses frantically work to make their computer systems Y2K (Year 2000) compliant, spending more than $500 billion worldwide. Y2K noncompliant computers cannot distinguish if 01/01/00 refers to 1900 or 2000, and thus may operate using a wrong date. This Y2K bug can affect any application that relies on computer chips, such as ATMs, airplanes, energy companies, and the telephone system.

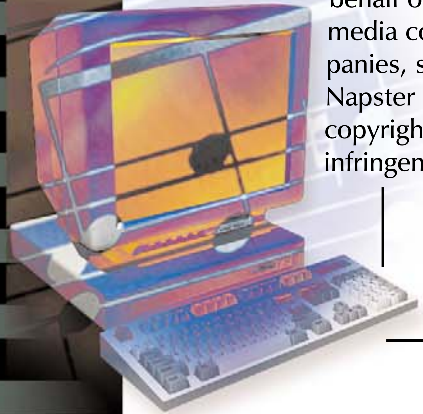
1999

Microsoft introduces Office 2000, its premier productivity suite, offering new tools for users to create content and save it directly to a Web site without any file conversion or special steps.

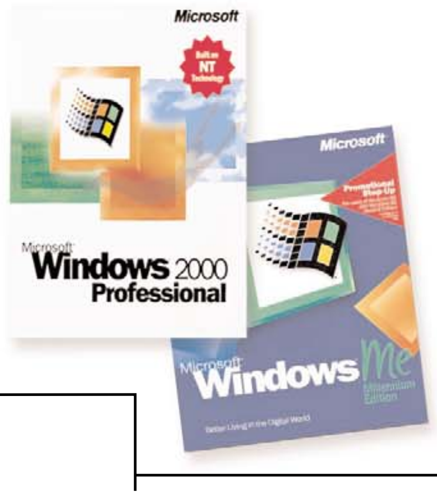
Open Source Code software, such as the Linux operating system and the Apache Web server created by unpaid volunteers, begin to gain wide acceptance among computer users.

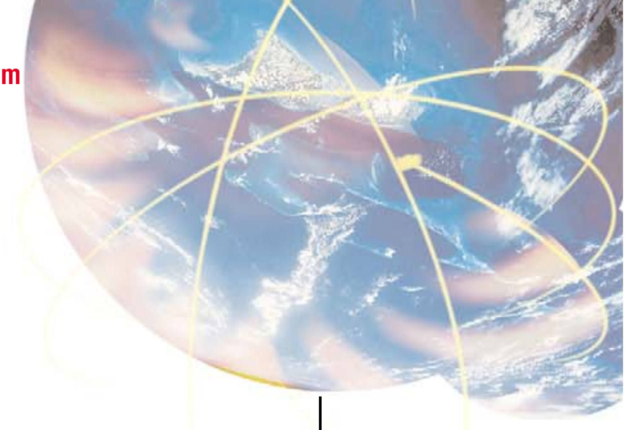
scsite.com/dc2002/ch1/timeline11.htm

Shawn Fanning, 19, and his company, Napster, turn the music industry upside down by developing software that allows computer users to swap music files with one another without going through a centralized file server. The Recording Industry of America, on behalf of five media companies, sues Napster for copyright infringement.



Microsoft ships Windows 2000 and Windows Me. Windows 2000 offers improved behind-the-scene security and reliability. Windows Me is designed for home users and lets them edit home movies, share digital photos, index music, and create a home network.


Microsoft
Built on NT Technology
Microsoft Windows 2000 Professional
Microsoft
Microsoft Windows Me Millennium Edition

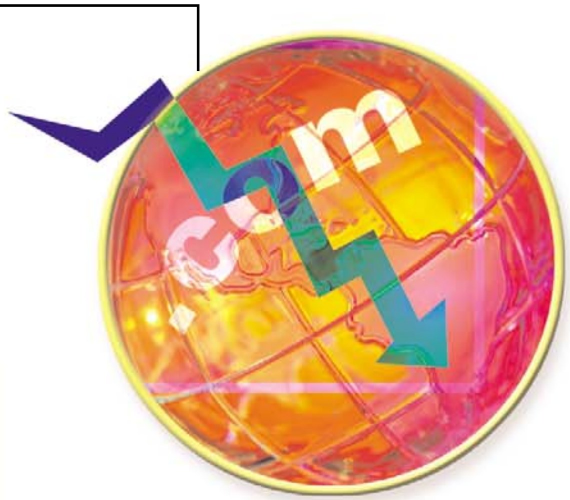


According to the U.S. Commerce Department, Internet traffic is doubling every 100 days, resulting in an annual growth rate of more than 700 percent. It has taken radio and television 30 years and 15 years to reach 60 million people, respectively. The Internet has achieved the same audience base in three years.

2000

Intel unveils its Pentium 4 chip with clock speeds starting at 1.4 GHz. The Pentium 4 includes 42 million transistors, nearly twice as many contained on its predecessor, the Pentium III.

E-commerce achieves mainstream acceptance. Annual e-commerce sales exceed $100 billion, and Internet advertising expenditures reach more than $5 billion.



Dot com companies (Internet based) go out of business at a record pace — nearly one per day — as financial investors withhold funding due to the companies' unprofitability.

Telemedicine uses satellite technology and videoconferencing to broadcast consultations and to perform distant surgeries. Robots are used for complex and precise tasks. Computer-aided surgery uses virtual reality to assist with training and planning procedures.

Microsoft introduces a new version of Office, which includes voice recognition and speech capabilities. Its Subscription mode lets users register the software over the Internet and renew or extend the amount of time it will run.

Microsoft launches its .NET strategy, which is a new environment for developing and running software applications featuring ease of development of Web-based services. As a user of applications, you will see the benefit of .NET as instant access to data and services in the context of your current task.

More than 25 million computer users subscribe to America Online and take advantage of its AOL Anywhere features, including Instant Messenger, e-mail, and customized news and information pages. AOL's merger with Time Warner combines the strengths of the Internet, entertainment, and communications industries.

2001

Application service providers offer a return to a centralized computing environment, in which large megaservers warehouse your data, information, and software, so it is accessible using a variety of devices from any location.

Wireless technology, especially handheld computers, achieves significant market penetration. Prices drop, usage increases, and wireless carriers scramble for new services, particularly for a mobile workforce that can access the Internet anywhere at any time.

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